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Address:

Rua Do Amorim, No 36, 1 Andar, 9500-020,
São Sebastião, Ponta Delgada, Portugal

Tel:

+94 112 849 268

Mobile:

+94 773 940 838 / +351 915 618 544

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GARI PARIS
MULTIDISCIPLINARY
SYMPOSIUM 2025

17th – 18th October 2025 in Gampaha Wickramarachchi
University of Indigenous Medicine, Yakkala, Sri Lanka and Paris, France

GLOBAL ACADEMIC RESEARCH INSTITUTE

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GLOBAL ACADEMIC RESEARCH INSTITUTE

Rua Do Amorim, No 36, 1 Andar, Ponta Delgada, Portugal |

87/23A, Kohila Kotuwa Road, Neelammahara,

Maharagama, Colombo, Sri Lanka

Tel: +94-112-849-268 / Fax: +94-112-849-426

Mobile: +94-773-940-838 / +351-915-618-544

For Registration: registration@gariteam.com

For Help: helpdesk@gariteam.com

WhatsApp: +94-773-940-838

Web: <https://globalacademicresearchinstitute.com>

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PREFACE

Global Academic Research Institute is proud to present the **GARI PARIS MULTIDISCIPLINARY SYMPOSIUM**, including the International Conference on Women's and Children's Health and Multidisciplinary papers, which is a series of successful research symposiums. The Inaugural Session and technical sessions were conducted on 17th, 18th, 19th October 2025 at Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka, AND Paris, France. The conference was organized into different disciplines, and empirical, conceptual, and methodological papers received from academics, practitioners, and public policymakers were accepted, paying close attention to the academic standards of the papers. To maintain consistency, authors were required to follow the academic writing format of the GARI Publishers. The reviewing process was transparent, where papers underwent a double-blinded review process by eminent subject specialists in their respective areas. Thus, refereed full papers selected to be presented at the conference were published here. We do not assume any responsibility for any errors or omissions in the research papers, which rest solely with the authors.

The organizing committee, special appreciation to the Academic Collaboration Department of Kaumarabhuthya & Streeroga in Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka and Conference Chair Dr. H. A. Renuka P. Perera, and Vice Chancellor, Deans, Heads of Departments of the University and Keynote Speakers Dr Anura Wickramanayake (Consultant surgeon (Ayu), Provincial Ayurveda Hospital Pallekele), Mr. R. Buddhika Ranaweera (University of the Visual and Performing Arts), Dr. P. Vijitha (Trincomalee Campus, Eastern University), Dr Saniya Sadaf Khan (New York Medical College, USA), Dr. Sailajah Sivarajah (Faculty of Siddha Medicine, University of Jaffna) and Session-Chairs are representing Faculty of Indigenous Medicine, University of Colombo; University of Jaffna, Trincomalee Campus, Eastern University and Gampaha Wickramarachchi University of Indigenous Medicine. namely Dr. Leena Illeperuma, Dr W.A.R.P. Weerasingha, Prof. K. P. K. R. Karunagoda, Dr. S.H.K. Deepthika, Dr Nithyapriya Sivaram, Dr. R. Piratheepkumar, Dr. Y.A.U. D. Karunaratne, Prof. M.U.Z.N.Farzana, Dr. M.N.S. Marasinghe, and Demonstrators, Conference Secretary, University Students and Supporting Staff of GWUIM and GARI Scientific Reviewers. As well as our Sponsors Beam Hela Osu Lanka (Pvt) Ltd, Fadna Life Sciences Pvt Ltd and MEGA PHARMA Pvt Ltd – Himalaya Wellness.

An International Academic Affiliation with Jagadguru Kripalu University - India, Department of Community Medicine, Mysore Medical College and Research Institute - India, International Federation for Fitness Health, Physical Education & Iron Games - Saudi Arabia, Australasian Institute of Ayurvedic Studies - Australia, Kathmandu School of Law – Nepal, Noble School of Business, India. Journal Partner as GARI Publishers and GARI International Journal of Multidisciplinary Research, all other GARI affiliated academic partners, Further

the support given by GARI Tours as Travel partner, Official Creative Partner Sameera Artco & MICE official Partner Sri Lanka Convention Bureau. The conference committee expresses deep gratitude to the panel of reviewers for the priceless service rendered. Finally, the committee extends sincere thanks to the presenters and participants for their valuable contribution and active participation.

Conference Committee
GPMS 2025

GARI AFFILIATIONS

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Our Association aims to devote itself to the fields of art, architecture, urban planning to defend visual ecology and the harmony of colors in the environment. The different fields and domains concerned, the theoretical and methodological development as well as the practical bases of environmental projects, are at the center of the professional interest of the activities of the Association CEC Couleur-Espace-Culture.

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Jagadguru Shree Kripaluji Maharaj envisioned a university that not only provides quality education but also aims at all-round personality development of the students, turning them into leaders in their chosen fields. The faculty at JKU are experts in their respective fields, with an intense desire to teach and guide the students to success. Regular interactions with industry leaders and opportunities to be part of various conferences and seminars broaden the students' horizons.

Kathmandu School of Law – Nepal



Kathmandu School of Law, established in 2000 AD as an affiliate of Purbanchal University, is a community-based, non-profit academic institution that upholds its unrestrained commitment for a pragmatic, research-based and community responsive legal education in the country. It was conceptualized within the ambit of non-profit movement dedicated to serve the need of an academically sound and functionally feasible legal education in Nepal.

Australasian Institute of Ayurvedic Studies – Australia



The Australasian Institute of Ayurvedic Studies is synonymous with quality and authentic education in Ayurveda. The Institute was founded in 1999 in Auckland, New Zealand and is proud to be the only training Institute in Australasia offering recognized Ayurvedic qualifications in both Australia and New Zealand.

International Federation for Fitness Health, Physical Education & Iron Games - Saudi Arabia



IFFPHPEIG was established in year 1995. It is one of the largest upcoming federation around the world. The Federation was established by the Honorary President Dr. Kaukab Azeem

Noble School of Business - India



Noble Institution will be a learning community that is focused on developing youngsters who will become leaders in an era of global competitiveness and technological advancements.

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Our company is inspired by a modern vision, driven by mission and supported by values. We have made our vision, mission and values visible here for you

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Founded in 1984 by our chairman Dr. Bandula Rathnasiri Piyarathna D.A.M.S, Beam Hela Osu Lanka Pvt Ltd has been a trusted name in Sri Lanka's pharmaceutical manufacturing industry for over four decades with our workforce of over 160 employees. With ISO and GMP certifications, the company upholds the highest quality standards in producing a diverse range of Ayurvedic medicinal products. Its portfolio includes Arishta, Asava, Guli, Kalka, Churna, Rasayana, oils, syrups, herbal teas, and balms - each crafted with a deep commitment to the rich traditions of Ayurveda, serving both local and international markets.

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Mega Pharma (Pvt) Ltd was incorporated in June 1995 as a Private Limited Liability Company. The company typically imports and markets high quality pharmaceuticals from around the globe. Mega Pharma enjoys an unblemished reputation built over 17 years for its high ethical standards practiced in sales, marketing and distribution operations. The company's product portfolio encompasses medicines, which are marketed through six divisions namely, Cardiology, Dermatology, Diabetology, Neurologically, Wound Care & Gynecology.

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Dr. M. Nuwan Sampath Marasinghe - Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka

Dr. Y.A.U. D. Karunaratne - Faculty of Indigenous Medicine, University of Colombo, Sri Lanka

Dr. S.H.K. Deepthika - Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka

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KEYNOTE SPEECH



“Reaffirming the Women and Children’s Health”

Dr. Anura Wickramanayake

(Profile: Consultant surgeon (Ayu); Provincial Ayurveda Hospital Pallekele, kundasale And Visiting lecturer in Shalya Tantra, PGIIM, and Member of Shalya Tantra speciality Board, University of Colombo, Sri Lanka)

Women and children represent the foundation of every society’s health and well-being. Yet, their right to holistic health continues to face challenges from neglected and stigmatized conditions that affect daily life and dignity. Among these, fissure-in-ano remains a significant yet under-addressed anorectal disorder, often impacting women in the postnatal period and children with chronic constipation. Persistent pain, bleeding, and emotional distress contribute to reduced quality of life, making its effective management a matter of both medical and human rights concern.

This keynote reaffirms the essential right of women and children to accessible, safe, and integrative healthcare by highlighting Ayurveda approaches to chronic fissure-in-ano. Ayurveda, with its time-tested principles of balance and individualized care, offers a holistic framework for prevention and cure. Further, medicinal and surgical treatments combined with dietary regulation and lifestyle modification to restore Agni (digestive fire), correct Vata imbalance, and promote tissue healing will be discussed.

Beyond therapeutic interventions, the Ayurveda perspective emphasizes preventive and promotive care—addressing diet, bowel habits, hydration, and postnatal self-care practices to prevent recurrence. This integrative understanding underscores that women’s and children’s health is not limited to disease management, but includes empowerment through awareness, access, and dignity in healthcare.

By reaffirming the right to holistic health through Ayurveda, this discourse advocates for the inclusion of evidence-based Ayurveda knowledge in modern public health frameworks, bridging ancient wisdom with contemporary practice to ensure well-being for women and children worldwide.

CLINICAL STUDY ON THE EFFECT AND EFFICACY OF THE SELECTED AYURVEDIC FORMULA IN THE MANAGEMENT OF PITYRIASIS VERSICOLOR

¹R.M.A.K.Rathnayaka, ²Dr.H.S Sakunthala, ³R.M.B.K. Rathnayake, ⁴A.D.H.S. Aluthge

^{1,2}Faculty of Indigenous Medicine, ³Faculty of Medicine, ⁴Faculty of Agriculture and

Technology, ^{1,2}Gampaha Wickramarachchi University of Indigenous Medicine,

³University of Ruhuna, ⁴Olds College of Agriculture & Technology,

^{1,2,3}Sri Lanka, ⁴Canada

ABSTRACT

Pityriasis Versicolor (PV) is a superficial fungal infection, often causing cosmetic concern and discomfort. In tropical regions like Sri Lanka, the prevalence of Pityriasis versicolor is notably high. Antifungal agents used for prophylaxis treatment of mycoses also have adverse endocrine and metabolic effects. This study aimed to evaluate the effect and efficacy of the selected Ayurvedic formula prepared with *Cassia occidentalis* seeds, *Raphanus sativus* seeds, and purified Gandhaka, in the management of Pityriasis versicolor. A clinical trial was conducted at Gampaha Wickramaarachchi Ayurveda teaching hospital, involving 44 patients, clinically diagnosed with PV. The intervention group was received the formula and assessed at baseline, day 15, and day 30. Outcome measures included reduction of burning sensation and itching sensation over the lesion, extent of reduction of surface area of the lesion, and changes in colour of the lesion. Data were analyzed using paired sample t-test, chi-square test, Pearson correlation test, and ANOVA test. Findings indicated a statistically significant reduction in surface area of the lesion ($p = 0.000$) and itching sensation ($p < 0.000$) between baseline and day 30. The colour changes in lesions demonstrated significant improvement between baseline and day 15 ($\chi^2 = 53.810$, $p = 0.000$) and

between day 15 and day 30 ($\chi^2 = 16.744$, $p = 0.010$), although changes between baseline and day 30 were not statistically significant ($p = 0.194$). The reduction in burning sensation did not demonstrate statistically significant improvement throughout the treatment period, which may be attributed to the fact that burning sensation was not a prominent baseline symptom in the majority of patients. The results revealed measurable trends of improvement across the evaluated outcomes, suggesting therapeutic potential of the formulation in Pityriasis Versicolor. Further large-scale, randomized controlled trials with extended follow-up are recommended to confirm efficacy and assess long-term outcomes.

Key words: Ayurveda, formula, Pityriasis versicolor

INTRODUCTION

Chakradatta had mentioned different external applications for *Sidhma kushta* like *Kasmarda Pralepa*, *Moolaka beeja Pralepa*, *Aaragwadha patra Pralep*, *Edgajadi Lepa*. Among them *kasamarda pralepa* consists of *Kasamarda* [En-Fetid *Cassia*] *beeja* (seeds of *Cassia occidentalis* L.), *Moolaka* [En- Radish] *beeja* (seeds of *Raphanus sativus* L.) And *Gandhaka* (Sulfur) (Sharma, 2002). The scientific name of *Kasamarda* is *Cassia occidentalis*

Linn. The leaves and seeds of Kasamarda are used externally and internally in various formulations for Kushta (Dash & Sharma, 2001). Terras et al. (1992) identified a nonspecific lipid transfer protein like compound from radish seeds that demonstrated in vitro antifungal activity against multiple fungal species. Nellika Gendagam destroys ama dosa, krimi, toxins. Gandhaka (sulfur) is able to cure dada, kushta (skin disease) (Buddhadasa, 1981). Therefore, Kasamarda pralepa may be more effective in the management of Sidhma kushta than other external application. Pityriasis Versicolor is a common superficial fungal infection of the skin. It is caused by common human saprophytes called *Malassezia* spp. There is a relationship between the symptoms of Pityriasis Versicolor as reported in the western medical system and the signs and symptoms of Sidhma kushta as mentioned in Ayurvedic classics. Therefore, Kasamarda pralepa recommend for sidhma kushta may be effective in the management of Pityriasis Versicolor. Skin problems are prevalent worldwide and have a substantial impact on public health in both industrialized and developing nations. The psychological and social issues caused by skin lesions could increase the susceptibility of patients to mental health problems such which would be detrimental to their general wellbeing and quality of life (qol) (Cortés, et al., 2022). Antifungal agents used for prophylaxis treatment of mycoses also have adverse endocrine and metabolic effects (Lionakis et al., 2008). Present day expensiveness of antifungal agent and increased resistance to antifungal agent poses a severe threat, especially in nations with lower and moderate incomes. Therefore, carry out clinical studies to assess the impact and therapeutic efficacy of Ayurvedic formula is crucial.

General Objective

To evaluate the clinical efficacy of the selected Ayurvedic formula in the management of Pityriasis versicolor.

Specific objectives

To investigate the change of colour of the lesion with the treatment

To investigate the extent of reduction of surface area of the lesion with the treatment

To investigate the change of burning sensation over the lesion with the treatment

To investigate the change of itching sensation over the lesion with the treatment

Hypothesis

H1 = External application of the selected Ayurveda formula is effective in the management of Pityriasis versicolor.

H0 = External application of the selected Ayurveda formula is not effective in the management of Pityriasis versicolor

METHODOLOGY

Preparation procedure of the drug

The ingredients were authenticated and identified at the department of Dravyagunavigna, faculty of Intelligence Medicine. The setting of the drug preparation was Bhaisajjagara, Department of Dravyagunavigna, Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous Medicine. Seeds of fetida cassia, seeds of radish, fine powder of purified Nellikka gendagam, water, pure bee-wax, sesame oil. Crude Nellikka Gendhagam was purified according to the method mentioned in Rasa Rathna Samuchchaya. The preparation of the decoction (kwatha), and the paste (kalka) was done by using dry seeds of Radish and Fetida Cassia. The Thaila was prepared according to sneha kalpana mentioned in Sharangadhara Samhita (Kumarasinghe,

2007). The ointment was prepared according to Siktha thaila nirmana mentioned in Rasa Tharagani (Shasthirana, 1979). Fine powder of purified Nellika Gendhagam was added to the mixture and stirred.

Clinical Study

The study will be conducted at the outpatient department Gampaha Wickramarachchi Ayurvedic teaching hospital, Yakkala, Sri Lanka. The patients in age between 15 to 60 years old and patients who don't expose to heavy sun light daily who have received diagnosis of Pityriasis versicolor by physicians were selected for the clinical trial. Pregnant women, lactating women, those with concomitant diseases, those have an evidence of human immunodeficiency virus or other life-threatening infection, patients who have drug allergy were excluded from the trial. The test group was be advised to apply the formulation topically twice daily (Dose-120mg, Time-morning and evening) and assessment of efficacy following the initial (base line) visit, 15 day and day 30 carried on the basis of selected objective parameters including change of the colour of the lesion, extent of the reduction of the lesion's surface area, itching over the lesion, burning over the lesion.

RESULTS AND DISCUSSION

During the initial 15 days, the mean lesion surface area decreased from 188.98 cm² (± 279.78) to 109.53 cm² (± 176.56). This reduction was highly significant (mean difference = 79.44 cm², $p < 0.001$), with a strong positive correlation ($r = 0.984$, $p < 0.001$), indicating consistent improvement across participants during the early treatment phase. Between day 15 and day 30, a further significant decrease was observed (mean difference = -1.318, $p < 0.001$). However, the correlation

during this period was weak and non-significant ($r = 0.095$, $p = 0.541$). When baseline data were compared with day 30 outcomes, a marked and clinically meaningful reduction was achieved (mean difference = 165.09 cm², $p < 0.001$), supported by a strong correlation ($r = 0.940$, $p < 0.001$). A marked improvement in reduction of itching sensation in was observed within the first 15 days of treatment, as reflected with a mean difference of 0.682 while test result is ($t = 6.389$, $p < 0.001$) indicating that this decrease is statistically significant. Continued administration from Day 15 to Day 30 resulted reduction in itching (mean difference = 0.250; $t = 3.397$, $p = 0.001$), supported by a strong positive correlation ($r = 0.770$, $p < 0.001$). When the entire 30-day treatment period was considered, the cumulative reduction in itching is highly significant, with a mean difference of 0.932 ($t = 7.304$, $p < 0.001$).

Between baseline and day 15, a strong positive correlation ($r = 0.940$, $p = 0.000$) confirmed a noticeable reduction in burning sensation, with a mean difference of 0.07. However, the paired t-test result ($t = 1.775$, $p = 0.083$) indicated that this change was not statistically significant at the 5% level. Similarly, during the period from day 15 to day 30, a mean difference of 0.047 was observed, suggesting a mild reduction in burning sensation. But, the statistical test ($t = 1.431$, $p = 0.160$) again demonstrated a non-significant change. Over the full study duration, from baseline to day 30, a mean difference of 0.114 was identified, with the paired t-test result ($t = 1.702$, $p = 0.096$) showing a non-significant outcome. A highly significant change in colour distribution was observed between baseline and day 15 ($\chi^2 = 53.810$, $df = 9$, $p = 0.000$), suggesting that the formulation exerted a marked therapeutic effect within the first two weeks. Between day 15 and day 30, further but less pronounced improvement was noted ($\chi^2 = 16.744$, $df = 6$, $p = 0.010$) but

the comparison between baseline and day 30 did not show statistical significance ($\chi^2 = 16.744$, $df = 6$, $p = 0.194$).

The study demonstrated that among the evaluated features, a statistically significant association was observed only between itching sensation and aggravating factors ($p=0.014$), while no such relationship was noted with gender, age, occupation, duration of the disease, or Sharirika Prakruthi. Similarly, the color of the lesion showed a significant association with age ($p=0.024$), indicating that age may influence lesion discoloration. The ANOVA results revealed that burning sensation and itching sensation at day 15 significantly contributed to the reduction in surface area at day 30 ($p=0.039$), suggesting that mid-treatment symptom severity may serve as a predictor of final therapeutic response. Importantly, no adverse events were reported during the trial, highlighting the safety of the polyherbal formulation.

CONCLUSION AND RECOMMENDATION

The findings demonstrated that the formulation produced significant clinical improvement in terms of reduction in surface area of the lesion, reduction in itching sensation over the lesion, and change in colour of the lesion over the 30-day treatment period by indicating the therapeutic potential of the formula in the management of Pityriasis versicolor. Although burning sensation did not show statistically significant changes, this was likely due to its low baseline prevalence among patients. Further laboratory

research, investigation of this formulation in other superficial fungal infections, larger randomized controlled trials with extended follow-up periods (6–12 months) are recommended.

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COMPARATIVE ANALYSIS OF ALPHA-AMYLASE INHIBITORY ACTIVITY BETWEEN BARK AND FRUIT OF FICUS RACEMOSA TO INVESTIGATE ITS ANTI- DIABETIC POTENTIAL

N.A.A. Sanjeewani, H.A.R.P. Perera

Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka

BACKGROUND

Diabetes mellitus (DM) is one of the most significant chronic metabolic disorders of the modern era, characterized by persistent hyperglycemia due to defects in insulin secretion, insulin action, or both. It represents a major global health challenge, with an estimated 537 million adults affected worldwide as of 2021, and projections indicating this number may rise to over 780 million by 2045. Among its variants, Gestational Diabetes Mellitus (GDM) has emerged as a particularly alarming condition. GDM manifests as glucose intolerance first recognized during pregnancy and is associated with numerous complications, including hypertension, macrosomia, congenital malformations, and increased perinatal mortality. Furthermore, women with GDM are at elevated risk of developing Type 2 diabetes mellitus (T2DM) later in life. Management of GDM is complex. Conventional therapeutic interventions include dietary modification, insulin therapy, and oral hypoglycemic agents such as metformin. While these approaches can be effective, they are often costly and associated with potential side effects, such as hypoglycemia, gastrointestinal disturbances, and restricted safety profiles during pregnancy. This has created a strong impetus to explore safe, cost-effective, and culturally acceptable alternatives, particularly from medicinal plants. In traditional Ayurvedic medicine, *Ficus*

racemosa (commonly known as cluster fig, Attikka, Udumbara) has been extensively used for managing metabolic disorders, gastrointestinal ailments, menorrhagia, and various inflammatory conditions. Both its bark and fruit are considered pharmacologically active. Phytochemical studies have revealed the presence of alkaloids, glycosides, flavonoids, tannins, saponins, β -sitosterol, and lupeol acetate, all of which are associated with hypoglycemic and antioxidant effects. Classical Ayurvedic practices even recommend the use of *Ficus racemosa* fruit with coconut as a home remedy for managing GDM. Despite its widespread traditional use, there remains limited comparative scientific evidence evaluating which part of the plant — fruit or bark demonstrates stronger anti-diabetic activity. Therefore, this research was designed to scientifically compare the α -amylase inhibitory and antioxidant potentials of bark and fruit extracts of *F. racemosa* in order to establish a pharmacological foundation for its role in diabetes management.

Objectives

The study was undertaken with the following aims:

1. To identify the phytochemical constituents of bark and fruit extracts of *Ficus racemosa*.
2. To evaluate the α -amylase inhibitory activity of bark and fruit extracts prepared

using both hot water and hexane extractions.

3. To assess the antioxidant potential of the same extracts using the DPPH radical scavenging assay.

4. To compare the bioactivities of bark and fruit in order to identify their relative strengths and complementary roles in diabetes management.

5. To validate Ayurvedic traditional practices and provide a scientific basis for developing safe, affordable, and effective plant-based interventions for diabetes, particularly GDM.

METHODOLOGY

This was a laboratory-based comparative analytical study. Collection and authentication of plant materials

Fresh bark and fruit of *Ficus racemosa* were collected from Yakkala, Sri Lanka. Samples were authenticated at the Department of

Dravyaguna Vignana, Faculty of Indigenous Medicine, GWUIM.

Preparation of Samples

Bark and fruit samples were washed, shade-dried, and mechanically ground into fine powder using a grinder. Powder was sieved (mesh no. 40, 45 micron) to ensure uniform particle size.

Extraction

Two solvents were used to capture both polar and non-polar phytoconstituents:

Hot water extraction (polar) Hexane extraction (non-polar)

Extraction was carried out using the Soxhlet method. The concentrated extracts were obtained via rotary evaporation.

Phytochemical screening

Standard qualitative tests were performed to detect the presence of alkaloids (Wagner's reagent), glycosides, flavonoids, tannins (Ferric chloride test), saponins (foam test), and terpenoids.

α -Amylase inhibition assay

The α -amylase inhibitory activity was determined using the dinitro salicylic acid (DNSA) method. Plant extracts (5–15 mg/mL) were incubated with α -amylase enzyme and starch substrate, followed by colorimetric measurement at 540 nm. The percentage inhibition was calculated, and IC_{50} values were derived from concentration–response curves. Acarbose was used as the positive control.

DPPH radical scavenging assay

Antioxidant activity was determined by measuring the ability of extracts to scavenge DPPH free radicals. Absorbance was recorded at 517 nm. Results were expressed as IC_{50} values, with lower values indicating stronger activity.

Statistical analysis

Data were analyzed using descriptive statistics and inferential tests. Differences between bark and fruit extracts were considered statistically significant at $p < 0.05$.

RESULTS

Phytochemical screening

Both bark and fruit extracts contained multiple secondary metabolites, including flavonoids, tannins, alkaloids, saponins, and terpenoids, although the relative abundance varied depending on the plant part and solvent used.

α -Amylase inhibition

Bark (hexane extract): $IC_{50} = 125.00 \pm 4.86 \mu\text{g/mL}$ Fruit (hexane extract): $IC_{50} = 180.00 \pm 3.12 \mu\text{g/mL}$

Hot water extracts showed moderate activity but were less potent than hexane extracts. Antioxidant activity

Fruit (hexane extract): $IC_{50} = 12.40 \pm 0.25 \mu\text{g/mL}$

Bark extracts showed comparatively lower antioxidant capacity.

Statistical analysis

Differences in α -amylase inhibitory activity (bark > fruit) and antioxidant

activity (fruit > bark) were both statistically significant ($p < 0.05$).

DISCUSSION

The results provide compelling evidence for the dual bioactivity of *Ficus racemosa*. The bark, with its strong α -amylase inhibitory activity, appears highly effective for reducing postprandial hyperglycemia. This suggests that bark extracts could be valuable in directly modulating carbohydrate metabolism by delaying starch breakdown and glucose absorption in the intestine.

On the other hand, the fruit demonstrated significantly stronger antioxidant activity. Antioxidants play a crucial role in diabetes management by neutralizing free radicals, thereby reducing oxidative stress and preventing secondary complications such as cardiovascular disease, neuropathy, and nephropathy.

The contrasting strengths of bark and fruit indicate that the two parts of the plant may exert complementary therapeutic effects: the bark targeting enzymatic regulation of blood sugar and the fruit providing systemic antioxidant protection. This validates Ayurvedic practices where both bark decoctions and fruit preparations are recommended for metabolic disorders.

Importantly, the results also have implications for gestational diabetes management. Since safety is paramount in pregnancy, the identification of plant-based therapies with minimal side effects is highly valuable. By combining bark and fruit extracts, a synergistic formulation could potentially provide both glycemic control and antioxidant defense for pregnant women with GDM.

CONCLUSION

This study scientifically validates the traditional use of *Ficus racemosa* in the

management of diabetes. The bark demonstrated potent α -amylase inhibitory activity, while the fruit exhibited strong antioxidant properties. Together, they present a holistic therapeutic profile with potential applications in both glycemic regulation and oxidative stress mitigation. These findings suggest that *F. racemosa* is a promising candidate for the development of affordable, accessible, and plant-based anti-diabetic interventions, particularly in resource-limited settings where conventional medications may be financially burdensome.

RECOMMENDATIONS

1. Isolation and characterization of active compounds: Further phytochemical studies should focus on isolating and structurally characterizing the bioactive constituents responsible for α -amylase inhibition and antioxidant activity.
2. In vivo validation: Animal models of diabetes should be employed to assess the pharmacological efficacy and safety of bark and fruit extracts.
3. Formulation development: Standardized polyherbal or monoherbal formulations using *Ficus racemosa* should be investigated for potential therapeutic applications.
4. Clinical trials: Rigorous clinical studies, especially targeting women with gestational diabetes, are recommended to establish efficacy, safety, and dosage.
5. Public health integration: Given the affordability and cultural acceptance of Ayurvedic remedies, integrating *Ficus racemosa*-based therapies into community-level diabetes management programs could be highly beneficial.

Keywords: *Ficus racemosa*, α -Amylase inhibition, Antioxidant activity, Diabetes mellitus, Gestational diabetes, Ayurveda, Phytochemicals

IMPACT OF HYDR FACIAL AS A NON INVASIVE APPROACH ON ACNE AND POST ACNE SCARS. - A LITERATURE REVIEW WITH CASE EVIDENCE

¹E.M.C.N.Ekanayaka, ²S.V.K.Serasinghe

¹*Faculty of Indigenous Medicine University of Colombo,*

²*Osethma Ayurveda Hospital, Maharagama,*

Sri Lanka

ABSTRACT

Acne vulgaris and its sequelae, particularly post-acne scars, remain a major dermatological concern that significantly impacts quality of life. Conventional treatment approaches often involve invasive procedures such as chemical peels, microneedling, or laser therapy, which may pose risks of discomfort, downtime, or adverse effects. HydraFacial a non-invasive resurfacing technique that combines cleansing, exfoliation, extraction, hydration, and antioxidant protection, has emerged as a promising alternative in aesthetic dermatology. This study aims to review the current evidence on the efficacy of HydraFacial in managing acne and post-acne scars, while presenting one illustrative case from Osethma Beauty and Skin Clinic. A literature review was conducted to evaluate published studies on the mechanisms, benefits, and limitations of HydraFacial for acne management. Findings suggest that HydraFacial enhances skin hydration, regulates sebum production, improves skin texture, and reduces inflammatory lesions. Moreover, repeated sessions demonstrate potential in reducing post-acne hyperpigmentation and superficial scarring through gentle exfoliation and enhanced dermal regeneration. The case evidence presented supports these findings, highlighting notable improvements in skin clarity, reduction of inflammatory lesions, and visible fading of post-acne scars after a structured treatment protocol. In

conclusion, HydraFacial appears to be a safe, effective, and patient-friendly non-invasive modality for acne and post-acne scar management. While existing data and case outcomes are encouraging, larger clinical trials are warranted to establish long-term efficacy and optimize treatment protocols.

Keywords: HydraFacial, acne, post-acne

INTRODUCTION

Acne vulgaris is a common dermatological condition affecting adolescents and adults worldwide, often leading to physical discomfort, psychological distress, and post-acne scarring. Traditional treatments, including topical and systemic medications, chemical peels, and laser therapies, have shown varying degrees of efficacy, but often carry limitations such as invasiveness, prolonged downtime, and potential side effects. In recent years, non-invasive cosmetic procedures have gained popularity for their ability to improve skin appearance with minimal risk and recovery time. Among these, the HydraFacial has emerged as a promising therapeutic approach. HydraFacial is a multi-step, non-invasive procedure that combines cleansing, exfoliation, extraction, hydration, and antioxidant infusion using a patented device. Its mechanism targets clogged pores, excess sebum, and inflammation while promoting

skin rejuvenation, making it potentially beneficial for both active acne management and post-acne scar reduction. Despite growing clinical use, scientific literature evaluating its efficacy remains limited, with most evidence derived from case reports, small cohort studies, and anecdotal observations. This study aims to provide a comprehensive literature review on the impact of HydraFacial therapy on acne and post-acne scars, supplemented by a single case evidence from Osethma Beauty and Skin Clinic. By synthesizing current knowledge and practical outcomes, the research intends to clarify the potential benefits, limitations, and future directions for integrating HydraFacial as a non-invasive modality in acne management and post-acne scar care.

Objectives

To review existing literature on the efficacy of HydraFacial as a non-invasive treatment for active acne and post-acne scars.

To evaluate the clinical outcomes of HydraFacial on acne lesions and post-acne scarring in a single patient case.

To assess patient satisfaction and tolerability of HydraFacial as a non-invasive aesthetic procedure.

To identify potential benefits and limitations of HydraFacial for acne management and scar improvement

To review and synthesize the current scientific literature on the proposed mechanisms of action by which the HydraFacial device and its proprietary serums (example - containing salicylic acid, glycolic acid, peptides) target the key pathophysiological factors of acne, including follicular hyperkeratinization, sebum overproduction, bacterial colonization, and inflammation.

To present a supporting case evidence of a patient with acne and post-acne scarring treated with a series of HydraFacial treatments at Osethma

Beauty and Skin Clinic, documenting clinical outcomes through standardized photography and patient-reported satisfaction to illustrate the real-world application and results of the reviewed literature.

CONCLUSIONS

HydraFacial appears to be a safe and effective non-invasive approach for improving active acne lesions and post-acne scars. Literature evidence and the single-case observation indicate reductions in inflammatory and comedonal lesions, improvements in scar texture, and high patient satisfaction with minimal adverse effects. These findings suggest that HydraFacial can be considered as an adjunctive or alternative therapy in acne management, particularly for patients seeking non-invasive treatment options. Further controlled studies with larger sample sizes are recommended to validate its long-term efficacy and optimize treatment protocols.

DISCUSSION

HydraFacial, as a non-invasive multi-step procedure, offers combined benefits of exfoliation, extraction, hydration, and antioxidant delivery, which may improve both active acne lesions and post-acne scars. Literature indicates that repeated HydraFacial sessions can reduce comedonal and inflammatory lesions, enhance skin texture, and promote a more uniform skin tone. The single-case observation in this study corroborates these findings, showing notable reduction in inflammatory lesions and improvement in scar appearance without adverse effects. The non-invasive nature and minimal downtime make HydraFacial an attractive option for patients seeking aesthetic improvements alongside conventional acne management. While results are promising, variability in session protocols,

device settings, and patient skin types may influence outcomes. Additionally, most available studies are limited by small sample sizes or short follow-up periods, highlighting the need for larger, controlled trials. Overall, combining literature insights with case evidence suggests that HydraFacial is a safe, effective adjunctive therapy for acne and post-acne scarring, with potential to enhance patient satisfaction and adherence to treatment. Future research should focus on standardized protocols, comparative efficacy, and long-term effects to strengthen clinical recommendations.

METHODOLOGY

This study combined a narrative literature review with a single-patient case observation conducted at Osethma Beauty & Skin Clinic.

Literature Review

ases (PubMed, Scopus, Cochrane Library, Google Scholar) were searched for studies published between 2000 and 2025 using keywords: HydraFacial, hydradermabrasion, acne, and post-acne scars. Inclusion criteria comprised clinical trials, cohort studies, case series, or case reports evaluating HydraFacial or comparable non-invasive treatments for acne or post-acne scarring. Exclusion criteria included animal studies, in-vitro studies, non-English articles without translation, and abstracts lacking outcome data. Two reviewers independently screened titles, abstracts, and full texts, resolving disagreements by consensus. Data extracted included study design, participant characteristics, treatment protocols, outcomes, and adverse events.

Case Observation:

One adult patient with active acne and atrophic post-acne scars was treated with HydraFacial. Baseline assessment

included inflammatory and non-inflammatory lesion counts, scar grading (Global Acne Grading System and Goodman & Baron scale), and standardized photography. The HydraFacial protocol consisted of cleansing, exfoliation, extraction, hydration, and antioxidant infusion administered every 2–4 weeks over 8–12 weeks. Outcomes were reassessed at 4, 8, and 12 weeks, including lesion reduction, scar improvement, patient satisfaction, and any adverse effects.

Ethics and Analysis:

Written informed consent was obtained from the patient, and clinic approval was secured. Descriptive statistics were used to summarize outcomes and pre-post changes

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FORMULATION AND EVALUATION OF THE ANTIBACTERIAL PROPERTIES OF HERBAL DEODORANT

¹Costa D.P.M, ²Perera H.A.R.P, ³Perera W.P.R.T

^{1,2}*Department of Kaumarabruthya & Stree Roga, ³Department of Indigenous Medical Resources, ^{1,2}Faculty of Indigenous Medicine, ³Faculty of Indigenous Health Sciences and Technology, Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka*

ABSTRACT

Body malodor, particularly from the axillary region, arises through microbial biotransformation of apocrine sweat components, with *Staphylococcus aureus* and *Escherichia coli* identified as major contributors. Conventional deodorants and antiperspirants nowadays rely heavily on synthetic agents such as aluminum salts, parabens, and triclosan, which are implicated in dermatological irritation, endocrine disruption, and potential carcinogenicity. In response to these concerns, the present study aimed to develop and scientifically validate an anticarcinogenic and antimicrobial phytotherapeutic deodorant formulation utilizing medicinal herbs with laboratory proven pharmacological properties. *Chrysopogon zizanioides* (Vetiver) was incorporated as a natural fragrant, *Aegle marmelos* (Bael) as an antiperspirant as well as astringent, and *Ocimum sanctum* (Tulsi) as a broad-spectrum antimicrobial constituent. Essential oils of Vetiver roots, Tulsi leaves and Bael leaves were isolated through hydro-distillation with Clevenger apparatus and incorporated into beeswax–virgin coconut oil bases at varying ratios (HD1–HD3). The optimized formulation (HD3; beeswax to coconut oil 1:8) was subjected to antimicrobial evaluation using agar well diffusion assay against *S. aureus* and *E. coli*. HD3 manifested significant inhibitory zones (33.67 (+/- 2.08) mm and 20 (+/- 0.01) mm against *S. aureus* and *E. coli* respectively. However, two commercially available deodorants (MD1 and MD2) were reported inhibitory zones of 0.67 (+/- 0.58) mm; 0.33 (+/- 0.58) mm for *S. aureus* and 0.1 (+/- 0.01) mm; 0.67 (+/- 0.58) mm for *E. coli* respectively, which revealed negligible antibacterial activity. In addition, physicochemical profiling including pH determination, spreadability, peroxide value, and thermal stability corroborated that HD3 complied with Sri Lanka Standards (SLS 743:2021) for cosmetic preparations. These findings substantiate the potential of Ayurvedic herbal deodorants as efficacious, biocompatible, and environmentally sustainable alternatives to synthetic formulations.

Keywords: Anticarcinogenic and Antimicrobial, Herbal deodorant, *Ocimum sanctum*

A COMPREHENSIVE LITERATURE REVIEW OF MANDAM ROGA IN TRADITIONAL MEDICINE

Jayarathna M.G.D.P, Perera H.A.R.P, Weerasingha W.A.R.P,

Marasinghe M.N.S, Dharmawijaya P.K.H3

Faculty of Indigenous Medicine,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Mandam Roga is a group of nutritional deficiency disorders affecting infants and children, causing impaired growth and cognitive development delays. In Sri Lankan traditional systems such as Ayurveda and Deshiya Chikitsa, Mandam Roga (MR) holds clinical importance. Ancient classical Ayurvedic texts classify Mandama into several types based on symptoms, etiology, and behaviors. Information on MR is scattered, highlighting the need for a clear and concise summary. This research aims to compile scattered information on MR and conduct a comprehensive exploration. This study employs a qualitative methodology, combining classical textual analysis with online research. Primary literature sources with its mentioning of MR types include Kumara Aushadha Maalawa (18 types), Yoga Kaushthakaya (7 types), Vaidya Hasta Saaraya (18 types), and Puskolapath (6 types). Data was extracted from printed and unprinted manuscripts, supported by credible online databases to identify parallels with modern pediatric nutritional disorders. The root cause of MR lies in Agni Dushti (impairment of digestive/metabolic fire), which leads to Agnimandaya (digestive weakness), Poshana Mandaya (Nutritional deficiency), and Vardhaka Mandaya (growth and development delay). The contributing factors include maternal poor health and nutritional status, infant or child poor health and nutritional status. MR in indigenous medicine is based on child clinical features and etiologies. It can correlate to modern medicine diseases such as Ata Mandama - Rickets, Udu Mandama - protein energy malnutrition and Agurukana Mandama - Iron deficiency anemia conditions. Treatment in traditional systems emphasises digestive restoration and rich nutritional support using medicinal preparations like Basna, spiritual rituals are incorporated to enhance recovery, such as Yantra and Mantra. This research highlights the importance of integrating traditional Ayurvedic knowledge with contemporary medical science. By comparing MR with modern nutritional disorders, it promotes a bridge of understanding of pediatric health issues. Such integration is essential for accurate diagnosis, timely intervention, and develop prevention strategies.

Keyword: Mandam Roga, Nutritional deficiency, Agnimandaya, Ayurveda pediatrics

**REVIEW OF ANTENATAL CARE IN PARARAJASEGARA KETPAROGA
NIDHANAM – THE ANTENATAL CARE ESTABLISHED IN ANCIENT JAFFNA
KINGS ERA**

S. Ganesan

*Chief Siddha Medical Officer, Siddha Dispensary,
Jaffna Municipal Council, Sri Lanka*

ABSTRACT

This paper aims to analyze and highlight the ancient Siddha Medical and Traditional systems of Antenatal Care mentioned in Pararajasekara Katparoga Nidhanam, particularly the context of contemporary scientific understanding and validation. Garbha roga chikitsa (Antenatal care) in Siddha medicine focused on the physical, psychological, and spiritual well-being of both the mother and fetus. Ancient Jaffna, particularly during the Arya Chakravarthi dynasty, exhibited a well-organized system of traditional systems of medicine Siddha medicine, rooted in Dravidian heritage, was practiced widely in the Jaffna peninsula with royal patronage. Medical services of this era covered a broad range of specialties, including general medicine, obstetrics and gynecology, pediatrics, surgery, pharmaceutical preparations, snakebite treatment, and the management of fractures and dislocations. Particularly noteworthy was the development of effective systems for gynecological and obstetric care. Among the health services supported by the kings, maternal care especially antenatal care was given significant importance. Historical records indicate that antenatal care was well-organized, with the king's physicians implementing structured preventive measures for pregnant women throughout the 10-month gestation period. One of the important contributions from that period is Kiranthi Ennai - a traditional oil used for preventive and therapeutic pediatric care. Remarkably, several treatments established under the guidance of the Jaffna kings and their court physicians have now been validated through modern scientific research. This review explores the contributions of ancient Jaffna kings, notably King Pararasasekaran I and II, to the development and institutional support of antenatal care within the Siddha medical tradition.

Key words: Pararajasegara, Garbharoga, Nithanam, Kiranthi Ennai

CLINICAL EVALUATION OF KIRANTHY OIL IN THE PREVENTION OF KIRANTHY DISEASE AMONG CHILDREN UNDER ONE YEAR OF AGE

¹G.Sritharan, ²S.Ganesan

¹Herbal Health Care Centre, ²Siddha Dispensary,

²Jaffna Municipal Council,

Sri Lanka

ABSTRACT

Kiranthi is a common pediatric disorder observed during the period of the first three months (Kapuparuvam) in infants. According to Siddha medical literature, it is traditionally classified into two types: Senkiranthi (red) and Karunkiranthi (black), both of which are associated with birth-related hypoxia. Among Tamil community mostly in Northern and Eastern provinces of Sri Lanka, Kiranthi oil has been used as a traditional preventive remedy, although its efficacy has not been scientifically validated. Objective: To evaluate the effectiveness of Kiranthi oil in preventing Kiranthi disease among infants under one year of age. Methods: A descriptive cross-sectional study was conducted in two selected Medical Officer of Health (MOH) divisions. A total of 600 infants were enrolled. Data were collected through a structured questionnaire administered to mothers. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna. Statistical analyses included the calculation of Odds Ratio (OR), Relative Risk (RR), and p-values to determine significance. Results: A strong positive association was identified between Kiranthi diet intake by pregnant mothers and the incidence of Kiranthi disease in infants, with a Relative Risk (RR) of 6.52, indicating significantly higher risk. Additionally, infants who received Kiranthi oil application showed a statistically significant reduction in disease incidence ($p = 0.05$). Conclusion: This study provides preliminary scientific evidence supporting the traditional use of Kiranthi oil for the prevention of Kiranthi disease. The findings suggest that Kiranthi oil plays a significant protective role in early pediatric care within the Siddha medical system. Further controlled studies are recommended to confirm and expand upon these findings.

Key words: Kiranthi, Relative Risk, Siddha medical

UTILIZATION OF TRADITIONAL MEDICINE AMONG TEENAGE STUDENTS IN NATIONAL SCHOOLS OF TRINCOMALEE TOWN AND GRAVETS, SRI LANKA

¹K. Vidya dharshini, ²A. Manoraj

¹Department of Noinaadal Chikitsai, Faculty of Siddha Medicine, Trincomalee Campus,
Eastern University, ²Quality Assurance, Research, and Development Laboratory,
Bandaranaike Memorial Ayurveda Research Institute,
Sri Lanka

ABSTRACT

Traditional Medicine (TM) continues to play a vital role in healthcare practices in Sri Lanka, used for both preventive and curative purposes. Despite its widespread use, TM utilization among teenagers, particularly in Trincomalee, Sri Lanka remains under researched. Hence a cross-sectional analytical study was designed to assess the utilization of TM among teenage students in National schools of Trincomalee Town and Gravets. A total of 478 students, across six National schools with a mean age of 16.2 ± 1.4 years were recruited for the study. Data were collected using self-administrative questionnaire from March to June 2025. Descriptive statistics and Chi-square tests were used to analyze the data. Nearly all students (n=463; 96.86%) were aware of traditional medical systems. Among these 83.9% (n=401) students reported using TM, with 12.22% (n=49) indicating frequent use ($P < 0.001$). A substantial proportion (n=346; 86.28%) perceived that TM was beneficial ($P < 0.001$). The primary reason for choosing TM was its perceived safety and minimal side effects (n=218; 54.36%). Home remedies were commonly employed by 44.14% (n=177) students ($P = 0.001$), while TM health care facilities treatment was sought by 24.19% (n=97) students ($P = 0.018$), and only 9.27% (n=37) consulted traditional practitioners. Notably, 78.3% (n=314) used TM not only for treatment but also for preventive purposes ($P < 0.001$), including immunity enhancement (n=226; 56.36%), and hair loss prevention (n=162; 40.4%). The study concludes that TM is widely used by teenagers in Trincomalee for treatment. Further the study particularly highlights that, reliance on home remedies surpasses the utilization of formal TM health care facilities.

Keywords: Traditional Medicine, Teenagers, Trincomalee

ILANTHAI KUDINEER CHOORANAM FOR THE MANAGEMENT OF BAALAR KAZHICHCHAL (ACUTE DIARRHOEA) - CASE STUDY

Nithyapriya Sivaram
*Faculty of Siddha Medicine,
University of Jaffna,
Sri Lanka*

ABSTRACT

In the Siddha system of medicine, Kazhichchal refers to a gastrointestinal disorder which characterized by frequent passage of loose stools, abdominal discomfort, and systemic debility. It can be correlated with acute diarrhea in the modern biomedical context. Traditional formulations such as Ilanthai Kudineer Chooranam, composed of herbs with documented astringent, carminative, and digestive properties, are indicated in Siddha Paediatric texts for the management of Kazhichchal. Conventional management often focuses on fluid replacement and symptomatic relief; however, Siddha formulations such as Ilanthai Kudineer Chooranam are traditionally employed for their digestive, astringent, and rejuvenating properties. This case study aims to evaluate the therapeutic effectiveness of Ilanthai Kudineer Chooranam in the management of Kazhichchal. A single case of a 8 years old baby presenting with classical features of Kazhichchal, including increased frequency of loose stools, abdominal discomfort, and dehydration, was documented. The patient was administered Ilanthai Kudineer Chooranam in standardized dosage for 5 days as per classical Siddha literature, along with dietary advice. Clinical response was assessed through symptomatic relief, stool frequency, and overall improvement in general health. Safety was evaluated by monitoring for adverse effects throughout the treatment. Results within five days, marked improvement was observed. The frequency of stools reduced significantly, abdominal discomfort subsided, and the patient regained appetite and overall functional health status was restored. The findings of this case study suggest that Ilanthai Kudineer Chooranam is effective in managing Kazhichchal and may serve as a safe and beneficial alternative in Siddha practice. Further clinical studies with larger sample sizes are warranted to validate these results.

Keyword: Ilanthai Kudineer Chooranam, Kazhichchal, diarrhea, case study

ANTIFERTILITY EFFECTS OF ANTICANCER PLANTS AND THEIR POTENTIAL RISKS DURING EARLY PREGNANCY - A SYSTEMATIC REVIEW

Vijayarajah Thanushiyan

Department of Gunapadam, Faculty of Siddha Medicine,

Trincomalee Campus, Eastern University,

Sri Lanka

ABSTRACT

Cancer remains a major global health burden, with millions of new diagnoses and deaths annually. While integrative cancer treatments are concerns regarding systemic toxicities and limited long term efficacy have stimulated interest in herbal medicines. Many plants derived agents exhibit anticancer activity through mechanisms such as apoptosis induction, angiogenesis inhibition, and cell cycle arrest. However, several of these phytochemicals also interfere with reproductive processes, particularly during early pregnancy. This study aimed to systematically evaluate the antifertility effects of anticancer medicinal plants, elucidate their underlying mechanisms, and assess potential risks during early gestation. A systematic review was conducted in accordance with PRISMA 2020 guidelines. Comprehensive searches were performed in PubMed, Scopus and Google Scholar. Eligible studies included in vitro, in vivo, and clinical investigations published in peer reviewed English journals that reported both anticancer and reproductive outcomes. The review identified multiple plants, including *Plumbago indica*, *Aloe barbadensis*, *Ananas comosus*, *Bambusa arundinacea*, *Aristolochia bracteolata*, *Sesamum indicum*, *Nigella sativa*, *Ferula asafoetida*, *Anethum graveolens*, *Crocus sativus*, *Gloriosa superba*, and *Coriandrum sativum*, that demonstrated both anticancer and antifertility effects. Reported mechanisms involved hormonal disruption, oxidative stress, implantation failure, uterine contractility, and modulation of apoptotic and endometrial signaling pathways. In conclusion, while plant-based anticancer agents offer therapeutic benefits, their potential to impair reproductive physiology particularly during the first trimester necessitates rigorous reproductive risk assessments, dose standardization, and regulatory evaluation to ensure maternal and fetal safety.

Key words: Anticancer plants, Antifertility, Herbal safety, Phytochemicals, Reproductive toxicity

AN INTEGRATED LITERATURE REVIEW ON PERSONALITY DEVELOPMENT: BRIDGING AYURVEDA AND MODERN PSYCHOLOGICAL CONCEPTS

¹Dr. P.W.R. Wajralekha, ²Dr.H.A.R.P. Perera

¹Department of Cosmetology, ²Department of Kaumarabhruthya and Sthree Roga,

²Faculty of Indigenous Medicine, ¹Training Institute of Holistic Medicine,

²Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Personality development has long intrigued scholars across disciplines, with both ancient and modern frameworks offering valuable insights. This integrated literature review has aimed to bridge traditional Ayurveda perspectives with contemporary psychological theories to explore a more holistic understanding of personality development. Ayurveda, the ancient Indian system of medicine, conceptualized personality through the lens of the Tridosha (Vata, Pitta, Kapha) and Prakriti (individual constitution) and Triguna (Sattva, Rajas, Tamas), emphasizing the interplay of mind, body and spirit in shaping human behavior and temperament. In contrast, modern psychology is presented structure models such as Big five personality traits, Erikson's psychosocial stages and Bandura's social learning theory which emphasize cognitive, behavioral and social influences. By synthesizing literature from both domains this review highlights points of convergence such as the recognition of innate dispositions, the role of environmental factors and the potential for personality evolution across the lifespan. It also is examined areas of divergence, particularly in methodology and epistemology. The review suggested that integrating Ayurveda typologies and personalized interventions. Furthermore, it has opened avenues for culturally sensitive approaches to personality assessment and development. The interdisciplinary synthesis not only has underscored the relevance of ancient wisdom in modern contexts but advocated for a more inclusive and pluralistic approach to understanding personality. Future research is encouraged to operationalize Ayurveda constructs is empirically measurable ways, fostering cross-cultural dialogue and innovation in personality psychology.

Key words- Personality development, Integrated review, Ayurveda perspective

CORRELATION BETWEEN THE MODERN CONCEPT OF DIABETES MELLITUS AND UNANI CONCEPT OF ZIABETUS SHAKARI

Dr Fathima Munawwar

Sri Lanka

ABSTRACT

Diabetes mellitus a chronic metabolic disorder characterized by persistent hyperglycemia is one of the most prevalent non communicable diseases globally. Similarly Unani talks about a condition named Ziaabetes shakari which exhibits the clinical features of excessive thirst and excessive urination. Aim of this review is to explore the correlation between the modern biomedical concept of Diabetes Mellitus and its classical depiction in the Unani system of medicine. This explores the similarities in etiology, symptoms, and diagnostic criteria while highlighting the humoral imbalance specially Balgham and saudha as central to the Unani pathi physiology. Also this evolves historical descriptions by ancient Unani scholars mentioned in Unani classical texts, modern patho physiology and diagnostic criteria for diabetes mellitus and contemporary studies evaluating Unani approaches; differences appear in etiological models insulin glucose dysregulation vs Su I mizaj. Also this review briefly emphasizes on Unani management strategies such as Ilaj bil dawa (Dietary therapy), Ilaj bil tadbeer (Regimental therapy), Ilaj bil dawa (Pharmacotherapy) and their relevance in current integrative approaches. Understanding the correlation may enhance holistic management strategies and promote evidence based validation of Unani practices.

Keywords: Ziaabetes shakari, Diabetes mellitus, Mizaj

COMPARATIVE STUDY OF THE ANTIFUNGAL EFFECT OF TWO FORMULA OF PANCHAVALKALA DECOCTION AGAINST CANDIDA ALBICANS

¹W.A.P. Nimsara, ²W.S.S. Kumara, ³H.A.R.P. Perera,

⁴W.A.S. Tharangani, ⁵W.G.M. Lakmali

^{3,4}Department of Kaumarabhrithya & Stree Roga, ^{1,2,3,4}Faculty of Indigenous Medicine,

⁵Postgraduate Institute of Science,

^{1,2,3,4}Gampaha Wickramaarachchi University of Indigenous Medicine,

⁵University of Peradeniya,

Sri Lanka

ABSTRACT

Superficial candidiasis is a common fungal infection due to *Candida* species affecting humans worldwide. Due to the emergence of multi-resistant *Candida* and the side effects of existing antifungals, scientists have revisited to traditional and alternative medicine for candidiasis management. *Candida albicans* is a major causative agent for superficial infections. Panchavalkala, a traditional Ayurvedic formulation, is commonly used for its antimicrobial properties, including antifungal activity. This study aims to compare the antifungal efficacy of two different formulations of Panchavalkala decoction, referred to as Formula A and Formula B, against *Candida albicans*. The formulations were prepared following classical Ayurvedic methods and were tested for their antifungal activity using the agar well diffusion method. *Candida albicans* was isolated from clinical specimens, cultured on Sabouraud's Dextrose Agar (SDA), and identified through standard microbiological techniques. The results revealed that both formulations exhibited antifungal properties, with mean inhibition zones of 11.33 mm for both Formula A and Formula B. However, Formula B demonstrated greater variability in its antifungal activity, as indicated by a

higher standard deviation. In contrast, Fluconazole, used as a positive control, showed a significantly larger mean inhibition zone of 19.67 mm, confirming its superior efficacy. The comparable antifungal activity of both Panchavalkala formulations suggests their potential as alternative treatments for *Candida albicans* infections. However, the observed variability in Formula B underscores the need for further optimization and standardization.

Key words: *Candida albicans*, antifungal, Panchavalkala

INTRODUCTION

The incidence of fungal infections has been increasing over the last decades due to increasing number of immunocompromised patients across the world. *Candida albicans* is a common opportunistic fungal pathogen responsible for superficial infections, such as oral thrush and vaginal candidiasis. In severe cases, it can lead to systemic infections and can be fatal, especially in those with weakened immune systems. The rise in antifungal drug resistance has created a need for novel treatment options that are effective, safe, and affordable. Panchavalkala is a traditional Ayurvedic

formulation made from the barks of few medicinal plants. It has been used in Ayurveda to treat ulcers, wounds, and inflammatory conditions due to its antimicrobial, anti-inflammatory, and healing properties (Sharma, & Kumar, 2017). Thus, the current study aimed to systematically evaluate and compare the anticandidal activity of two different formulations of Panchavalkala decoction against *C. albicans* by finding out which formulation shows stronger antifungal effects and to provide evidence for better preparation methods and potential use in treatment.

METHODOLOGY

The Panchavalkala formulation used in the study included the barks of five medicinal plants. Each plants' bark was cleaned, dried, and ground into a powder separately before it uses. Two different formulations of Panchavalkala decoction were created to assess the antifungal activity. Formulation A contained equal parts of all five barks: Nuga (*Ficus bengalensis*), Bo (*Ficus trimenii* king), Attikka (*Ficus recimosa*), Kavudu Bo (*Ficus tsiaacle*), and Goraka (*Garcinia cambogia*). Formulation B used a modified ratio of the five barks: it alters the Goraka by Gamsuriya (*Thespesia populnea*). Panchavalkala decoctions were prepared using the classical kwatha kalpana method (1/4) at Wickramarachchi Ayurvedic Bhaisajyagara (Pharmacy) (nagodavithana, 2001). *Candida albicans* strains were collected using sterile cotton swabs from normal human oral flora. They were then examined microscopically and Gram's staining to check for the presence of budding yeast and pseudo-hyphae (Bahvan et al., 2010). The strains were cultured on Sabouraud Dextrose Agar (SDA) at 37°C for 48-72 hours. *Candida* cells were centrifuged, washed with phosphate-buffered saline, and resuspended in RPMI 1640 medium.

Antifungal sensitivity of *Candida* to the Panchavalkala solution was assessed by the Kirby-Bauer well diffusion method. Two formulars of Panchavalkala (50 µl) were tested as treatments, along with Fluconazole (50 µl) as the positive control and distilled water (50 µl) as the negative control.

RESULTS

Both Panchavalkala formulations showed antifungal properties against *C. albicans*. Formulation A created a mean zone of inhibition measuring 11.33 ± 0.58 mm. In contrast, Formulation B had a larger zone of inhibition of 11.33 ± 1.52 mm. Fluconazole resulted in a 19.67 mm mean zone of inhibition, while distilled water did not display any activity. The higher standard deviation in Formula B indicates more variability in its performance compared to Formula A. Thus, these findings suggest that Formulation A was more effective against *C. albicans* than Formulation B. This difference is likely due to the modified bark ratio and longer extraction time, which may have increased the concentration of active compounds responsible for antifungal effects, including tannins, flavonoids, and phenolics.

DISCUSSION

The comparable mean zones of inhibition in Formula A and Formula B suggest that both formulations have potential as alternative antifungal treatments. However, the variability in the standard error of mean for Formula B highlights the need for further optimization and standardization of this formulation to ensure consistent efficacy. The bioactive compounds in the decoctions, including flavonoids, tannins, and phenolics. These can be disrupting

fungal cell walls, block enzyme activity, and interfere the fungal metabolism (Aslam et al., 2008). However, the decoctions are slightly less effective than fluconazole, their natural source, suitability and low toxicity for topical application make them promising options for antifungal treatment. These findings support to the traditional use of Panchavalkala and promising the need to improve formulations. Further studies should be focus on isolating active compounds, evaluating effectiveness, and developing standardized formular. Among the two tested formulations, Formulation A, prepared with a modified ratio of the five barks and a longer boiling time, consistently showed greater antifungal activity compared to Formulation B. This sounds that both the amount and the type of plant material are important for releasing active compounds and diffusion rate. The antifungal effects can be linked to secondary metabolites such as flavonoids, tannins, and phenolic compounds. These bioactive compounds are known for their ability to destabilize fungal cell walls, block essential enzyme processes, and interfere with the metabolism of the fungi. Tannins can bind strongly to proteins, which may cause vital fungal enzymes to precipitate, disrupting metabolic functions and energy production. They also inhibit ergosterol synthesis, an important component of fungal cell membranes, leading to increased membrane permeability and the leakage of intracellular substances. Flavonoids can create reactive oxygen species (ROS) in fungal cells, leading to oxidative stress, mitochondrial damage, and cell death. In addition, flavonoids can bind essential metal ions which may needed for fungal enzyme activity and growth. Phenolic compounds work together with flavonoids and tannins by altering membrane integrity and fluidity (Dwivedi, & Tripathi, 2018). Being lipophilic, they penetrate the lipid bilayer,

disrupting the structural order of phospholipids and the cell wall barrier. This disruption may affect to nutrient transportation, ion balance, and cell signaling needed for fungal survival. All of these mechanisms may attack *C. albicans* from multiple angles by reducing the synthetic drug resistance. Though, the Panchavalkala activity is weaker than that of fluconazole, its natural origin, low toxicity, and potential for external application highlight its value as an alternative treatment for superficial candidal infections. Unlike synthetic antifungals, which naturally lead to resistance with long-term use, complex herbal formulations may offer prolonged effectiveness due to their multifaceted action with safety. Thus, these findings provide scientific support for the Ayurvedic use of Panchavalkala for modern medicine.

CONCLUSION

This study was demonstrated that both formulations of Panchavalkala decoction, Formula A and Formula B, possess antifungal properties against *Candida albicans*. While both formulations showed similar mean inhibition zones, Formula B exhibited greater variability in its results. Fluconazole, the positive control, outperformed both formulations, indicating the need for further optimization of the Panchavalkala decoctions. These findings support the potential use of Panchavalkala as an alternative antifungal treatment and pave the way for further research to enhance its efficacy and consistency.

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DEMONSTRATE PRELIMINARY ANTI-FUNGAL ACTIVITY OF SIDDHA PREPARATIONS

¹Sarvananthan T, ²Tharshanodayan NJQ, ³Rohini P

¹Provincial Department of Indigenous Medicine, Jaffna, ²District Siddha Hospital Mannar,

³Rural Siddha Hospital Mannar,

Sri Lanka

ABSTRACT

Candida albicans is one of the commonest fungi causing diseases in humans and colonize on the human intestine. Researchers have focused on the investigation of plant and microbial extracts, essential oils, pure secondary metabolites and new synthesized molecules as potential antimicrobial agents. With reference to siddha Padikkaraneer (PN), Pancha thuvarpi kasayam (PT), and Masikkai neer (MN) were used as antiseptic water. There is not enough known studies regarding anti-fungal activity of PN, PT and MN against certain pathogens *C.albicans*. Objective is to demonstrate in-vitro anti-fungal activity of above siddha preparations on *C.albicans* and to signify that the herbal mouthwashes could be a better alternative according to the standard drug Ketoconazole. It was observed that PN was the most effective among the three traditional mouthwash preparations and positive control tested. MN was no activity against fungi. PT was found to less effective against fungi (*C.albicans*). All positive control was less effective than Padikkaraneer. The ingredients contain anti-fungal compounds when further developed, can be used as phyto medicine for the anti-fungal agent. The most active fractions can be subjected to isolation of the therapeutic anti-fungal and undergo further Pharmacological evaluation. Hence, it can be used to discover bioactive natural products that may serve as lead in the development of new products.

Keywords: Anti –fungal, *C.albicans*, Padikkaraneer

INTRODUCTION

In siddha medicine, the use of metals and minerals are more predominant in comparison to other traditional medicine systems. In the usage of metals, minerals and other chemicals, this system was far more advanced (Sharma PV, 1992). Narayanaswami (1975) refers the drugs used by the siddhars could be classified into three groups such as herbal product (thavaram), inorganic substances (thathu) and animal products (jangamam).

With reference to siddha text Sarabendra Siththamaruththuvasadur, Noinaadal sikitsai part - 1 and Moola thaththuvam part - 1, Siddha preparations such as Padikkaraneer (PN), Pancha thuvarpi kasayam (PT), and Masikkai neer (MN) were used as antiseptic water. According to classical siddha literatures, the ingredients of PN are Potassium aluminum sulphate (padikaram / seenakaaram) and *Terminalia chebula*. Retz (kadukkaithol). PT kasayam consisting following barks collected from the trees such as *Ficus bengalensis* (arel), *Ficus religiosa* (arasu), *Ficus carica* (aththi), *Ficus virens* (iththi), *Syzygium cumini* (naaval) and the MN have single ingredient the gall of *Quercus infectoria* (Maasikkaai).

Candida albicans is one of the commonest fungi causing diseases in humans. It is commensal and is among the gut flora, one of the many organisms that live in the human mouth and gastrointestinal tract. *C. albicans* is normally present on the skin and in mucous membranes such as the vagina, mouth, or rectum. Oral candidiasis (oral thrush) one of the aids defining disease. In immuno competent people candida infestations will quickly respond to antifungal treatment. (Tortora et al., 2003; Abarca et al., 1994). There is not enough known studies regarding anti-fungal activity of PN, PT and MN against certain pathogens *Candida albicans*. Objective is to demonstrate in-vitro anti-fungal activity of herbal mouthwashes such as PN, PT and MN on *Candida albicans* and to signify that the herbal mouthwashes could be a better alternative according to the standard drug Ketoconazole.

METHODOLOGY

In this study, Siddha preparations Padikaara Neer, Pancha Thuvampi kasayam and Maasikkai Neer has been selected for anti-microbial activity on oral ulcers from the classical Siddha literatures. All Herbal and mineral raw ingredients were identified and authenticated by the experts of Siddha system. The purification of these raw materials were done as illustrated in Gunapadam Mooligai vaguppu and Gunapadam Thathu Jeeva Vagupu.

Preparation method of Siddha preparations

Preparation of the Padikaaraneer (PN)

25g of Potassium aluminum sulphate salt and 5g of powdered *Terminalia chebula* Retz were mixed with 480ml distilled water. Reduced the volume to 60ml (Sowrirasan, 2007).

Preparation of the Pancha thuvampi kasayam (PT)

Each 6g of powdered barks *Ficus bengalensis*, *Ficus religiosa*, *Ficus carica*, *Ficus virens* and *Syzygium cumini* were boiled with 480ml of distilled water. Reduced the volume to 60ml. (Kuppusamy Muthaliyar, 2004, 2016).

Preparation of the Maasikkaai neer (MN)

25g of powdered *Quercus infectoria* gall was boiled with 400ml of distilled water. Reduced the volume to 50ml (Kuppusamy Muthaliyar, 2004, 2016).

All three preparations were filtered with sterile cotton wool and filter paper. Kept in room temperature to cool and labeled as PN, PT and MN. Stored in to refrigerator.

The synthetic anti-microbial agents (Positive control)

<i>Candida albicans</i>	-
Ketoconazole	

Organisms selected for the study

The cultures were obtained from culture collection of Division of Microbiology, Faculty of Dental Sciences, and University of Peradeniya. *Candida albicans* (ATCC 90028), and further 30 clinical isolates representing each standard organisms were included in the study. The strains were sub-cultured on an appropriate agar plate 24 h prior to every anti-fungal test.

Agar well diffusion assay for evaluating anti-microbial activity of Padikkaaraneer, Pancha thuvampi kasayam and Masikkaai neer on standard and clinical isolates

Culture plates will prepare by using Muller Hinton Agar (MHA) for *Candida albicans* (ATCC 90028), Then 3 ml of prepared microbial inocula will pipette on to agar surface of the plate. After that, remaining broth culture will pipette out from the plate and allow drying for 3-5 minutes. Then wells (9mm diameter) will

Figure 3.1: Comparison of intra-species variation of zone diameter of 30 clinical isolates in

C.albicans

Panchathuvarpi kasayam and Masikai neer did not show any zones. Padikara neer showed larger zone diameter than the positive control in only Candida 3, 117, 114, 37, 39, & 47.

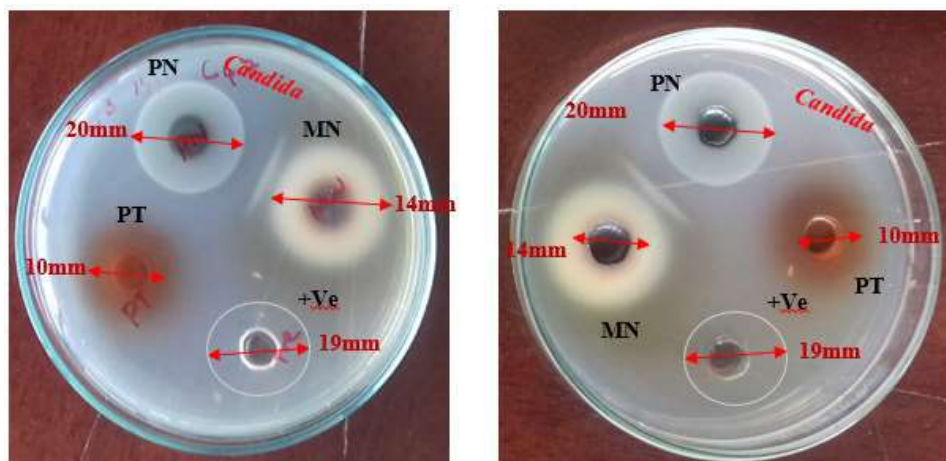


Figure 3.2 : The inhibition zone (mm) of herbal mouthwash preparations PN, PT, MN and Positive control against *Candida albicans*

It was observed that Padikaraneer (PN) was the most effective among the three traditional mouthwash preparations and positive control tested. Masikkai neer (MN) was no activity against fungi. Pancha thuvarpi kasayam (PT) was found to less effective against fungi (*Candida albicans*). All positive control was less effective than Padikaraneer (PN). When investigated for microbial contaminants of prepared three herbal mouthwashes, the mouthwash preparations were free of microbial contaminants. Thus indicating, the use of proper aseptic techniques. The results further showed the Padikaara neer had greater effect on *C. albicans* and showed significantly larger zone. However, Pancha Thuvarpi Kasayam failed to give significantly larger zone against *C.albicans*. Masikai neer not showed significant larger zone against *C.albicans*.

CONCLUSION

The results obtained by agar well diffusion method allow us to conclude that the Padikaara neer mouthwash exerted activity against fungi *C. albicans*. Present study indicates that the ingredients contains anti-fungal compounds when further developed, can be used as phyto medicine for the anti-fungal agent. The most active fractions can be subjected to isolation of the therapeutic anti-fungal and undergo further Pharmacological evaluation.

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THERAPEUTIC POTENTIAL OF AYURVEDA HERBS AND FRUITS IN ATHEROSCLEROSIS MANAGEMENT: A SYSTEMATIC REVIEW AND META- ANALYSIS

M.A.D. Kaumini, W.M.S.G. Karunarathna, H.B.D. Kaushalya,
S.L.A.S. Sandarenu, H.A.R.P. Perera
*Faculty of Indigenous Medicine,
Gampaha Wicramarachchi University of Indigenous Medicine,
Sri Lanka*

ABSTRACT

Atherosclerosis is a chronic, progressive inflammatory condition of the arterial wall characterized by lipid deposition, particularly low-density lipoprotein (LDL), and plaque formation at sites of disturbed blood flow. It serves as the underlying pathology for atherosclerotic cardiovascular disease (ASCVD), including myocardial infarction and ischemic stroke, and contributes to approximately 50% of all deaths in developed countries. This research aims to evaluate Ayurveda herbs and fruits for atherosclerosis management, exploring their pharmacological actions, therapeutic potential, and scientific evidence supporting their role in cardiovascular health promotion. A meta-analysis was conducted using studies published between 2020 and 2025. Literature was sourced from databases including PubMed, Scopus, and AYUSH Research Portal. PRISMA guidelines were followed. A systematic review of 25 studies (2020–2025) demonstrated significant benefits of Ayurvedic herbs and fruits in managing atherosclerosis. *Terminalia arjuna* (8 studies) reduced LDL by 15–20%, improved antioxidant activity, and enhanced endothelial function. *Embolia officinalis* (7 studies) increased HDL, reduced LDL, triglycerides, CRP, and IL-6 levels. *Commiphora mukul* (5 studies) lowered total cholesterol and stabilized plaques. *Curcuma longa* (3 studies) inhibited NF- κ B and improved nitric oxide synthesis, while *Allium sativum* (2 studies) reduced blood pressure and platelet aggregation. Combined therapies (5 studies) showed synergistic effects. Only 3 studies reported mild side effects, confirming overall safety and clinical potential of these botanicals. Ayurveda herbs demonstrate considerable therapeutic potential as adjunctive agents in atherosclerosis management through modulation of lipid profiles and suppression of vascular inflammation, supporting their integration into comprehensive cardiovascular care strategies.

Keywords: Atherosclerosis, Medicinal herbs, Fruits

POSTNATAL CARE AND ITS IMPACT ON MATERNAL AND CHILD HEALTH: INSIGHTS FROM SIDDHA MEDICINE – A REVIEW

Faisal Atheefa, Dr. S. Ushakanthan

Trincomalee Campus,

Eastern University, Sri Lanka

ABSTRACT

The postnatal period is a vital stage for maternal recovery and newborn adaptation, where appropriate care determines both immediate and long term health outcomes. This review evaluates Siddha postnatal practices and their role in maternal and neonatal well being, based on a comprehensive study of Siddha classical texts and contemporary research. Traditionally observed for 31 days, Siddha postnatal care emphasizes maternal rest, hygiene, therapeutic oil massages and herbal baths. Mothers are provided with herbal preparations such as Saraku, Kayam, Karumkurinji, Sowbakya Chundi, Thanneer Vittan Kilangu Nei and Thiripala Chooranam to restore uterine tone, regulate lochia, promote lactation and ensure overall rejuvenation. Nutrient rich dietary preparations including Pathiya Kuzhambu and Venthaya Kuzhambu are prescribed to enhance digestion, sustain energy, support healing and improve milk secretion. For the newborn, Siddha care highlights early initiation of colostrum, exclusive breastfeeding, safe swaddling, gentle herbal baths, proper hygiene and adequate sleep, which together contribute to growth, immunity and neurological development. The findings suggest that Siddha postnatal care offers a comprehensive and holistic approach that accelerates maternal recovery, supports lactation and safeguards neonatal health, thereby ensuring long term well being for both mother and child.

Keywords: Postnatal care, Siddha medicine, Neonatal health

EFFICACY OF A NOVEL HERBAL OIL FORMULATION FOR HEAD LICE REMOVAL

A.P.H.U. Perera, H.B.D. Kaushalya, S.L.A.S. Sandarenu, H.A.R.P. Perera

Faculty of indigenous Medicine,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Head lice (*Pediculus humanus capitis*) are parasitic insects that live on the human scalp, feeding on blood and laying eggs. Infestations are especially common among children aged 3–11 years and can easily spread to family members, with females more frequently affected. Symptoms include persistent itching, crawling sensations, irritability, sleep disturbance, and in some cases secondary bacterial infections due to scratching. Transmission occurs primarily through direct head-to-head contact, but contaminated objects such as combs, hats, towels, and bedding may also spread lice. Conventional pediculicides, though widely used, raise safety concerns particularly in children and resistance is increasingly reported. This study evaluated the safety and efficacy of a novel herbal oil formulation developed as a natural alternative. The preparation involved infusing Tulasi leaves (*Ocimum tenuiflorum*) and lemon peel (*Citrus aurantiifolia*) in pure white coconut oil, followed by blending with neem oil (*Azadirachta indica*) and tea tree oil (*Melaleuca alternifolia*). Each component contributes synergistic benefits: coconut oil moisturizes the scalp, suffocates lice, and enhances penetration of active compounds; neem oil, rich in azadirachtin, interferes with lice reproduction and provides antimicrobial activity; Tulasi soothes scalp irritation and supports hair health; lemon peel, with limonene and citric acid, loosens nits and acts as a natural cleanser; and tea tree oil, containing terpinen-4-ol, repels lice, prevents secondary infections, and reduces dandruff. The treatment protocol involved applying the oil twice weekly for two weeks, leaving it on the scalp for 30–40 minutes, followed by fine-toothed combing and washing. Efficacy was assessed through visual inspection and nit removal, while safety was evaluated by monitoring skin reactions. Findings indicate that this 100% natural oil is safe and effective for lice removal, offering added benefits such as scalp nourishment, hair growth promotion, and dandruff control positioning it as a promising herbal alternative to chemical pediculicides.

Keywords: Head lice, herbal oil, lice removal, transmission

A COMPARATIVE REVIEW OF ULLŌGAM AND ORAL CANDIDIASIS

Kehelella K.H.M.I.D, Perera H.A.R.P, Marasinghe M.N.S, Sandarenu S.L.A.S

Faculty of Indigenous Medicine,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Oral candidiasis, commonly known as oral thrush, is a fungal infection of the oral mucosa predominantly caused by *Candida albicans*. It is particularly common among infants and elderly individuals that have weakened immune systems. In Ayurveda and Sri Lanka's traditional medical system (Deshiya Chikitsa), a comparable condition is identified as Ullogam. It primarily affects children and is often attributed to fungal overgrowth due to poor oral hygiene. Although Ullogam is not extensively detailed in classical Ayurvedic texts, it is well elaborated in Sri Lankan traditional medicine. This narrative review aims to compare oral candidiasis in allopathic medicine with its traditional counterpart, Ullogam, focusing on etiology, pathophysiology, clinical features, and treatment strategies. In allopathy, oral thrush arises from the opportunistic proliferation of *Candida albicans* due to factors such as immune suppression, prolonged antibiotic or steroid use, poor oral hygiene, or systemic conditions like diabetes. Its pathogenesis involves the yeast-to-hyphal transition, biofilm formation, and secretion of proteolytic enzymes. In contrast, Ullogam is described as a fungal disease (e.g., *Oidium albicans*) associated with doshic imbalance, impaired digestion, and unhygienic practices. Both systems describe similar clinical signs, including white curd-like plaque, which adheres to whole of the oral mucosa including tongue, buccal mucosa, palate, gingiva, and oropharyngeal areas that can be wiped off, revealing an erythematous or bleeding surface underneath and recognize the risk of systemic spread in severe cases. Allopathic treatment typically involves antifungal medications like nystatin or fluconazole, whereas traditional remedies employ herbal formulations such as Aralu (*Terminalia chebula*), Māsakkā (*Quercus infectoria*), Kumarikā (*Aloe vera*), etc. that have antifungal properties. This comparative review highlights similarities between traditional and modern perspectives and suggests that combining both systems may provide more comprehensive and effective strategies for managing pediatric oral fungal infections.

Keywords: Oral candidiasis, Ullogam, Ayurveda and Sri Lanka's traditional medical system

PHARMACOLOGICAL AND DERMATOLOGICAL APPLICATIONS OF RHINACANTHUS NASUTUS: A LITERATURE REVIEW

Wijesinghe W.A.J.R.I., Gunarathne M., Kaushalya H.B.D.,

Sandarenu S.L.A.S., Perera H.A.R.P.

Department of Kaumarabruthya & Stree Roga,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Rhinacanthus nasutus (locally known as Anniththa) is a perennial herb widely distributed in Sri Lanka and traditionally used as an antidote for snake bites. The objective of this research is to review and synthesize existing scientific evidence on the pharmacological and dermatological applications of R. nasutus, with emphasis on its antifungal, antibacterial, anti-inflammatory, antioxidant, and anti-hemolytic properties. Recent studies have revealed its broader therapeutic potential in conditions such as diabetes, hypertension, tuberculosis, cancer, Alzheimer's disease, and neurodegenerative disorders. Of particular importance are its dermatological benefits, as the plant has shown effectiveness in treating skin diseases including ringworm, eczema, scurf, herpes, and inflammatory skin conditions. Literature reports confirm antifungal activity against *Microsporum gypseum*, *Trichophyton rubrum*, *Trichophyton mentagrophytes*, *Epidermophyton floccosum*, *Candida albicans*, *Talaromyces marneffeii*, and *Aspergillus niger*, along with antibacterial action against *Streptococcus mutans*, *Staphylococcus epidermidis*, *Propionibacterium acnes*, and *Staphylococcus aureus*. Methodologies employed across studies include DPPH and ABTS assays for antioxidant evaluation, macrophage cell models for antiinflammatory assessment, and red blood cell assays for anti-hemolytic testing. Results consistently demonstrate that R. nasutus extracts, particularly from the root, reduce inflammatory mediators, neutralize free radicals, and protect cells from oxidative stress. In conclusion, this review emphasizes the originality and value of R. nasutus as a promising medicinal herb and supports its potential for development into standardized dermatological formulations such as ointments, gels, toners, and antifungal sticks. Future research should focus on clinical trials, dosage standardization and safety evaluations.

Keywords: Rhinacanthusnasutus ,antifungal, antibacterial, anti-inflammatory, antioxidant, dermatology

INTEGRATING RENAL AND HAEMATOLOGICAL MARKERS TO TRACK DISEASE PROGRESSION IN WOMEN WITH CHRONIC KIDNEY DISEASE

1Karthiga M, 2Sangavi T, 3Kanistan J, 4Thangarajah BR, 5Arasaratnam V

^{1,3}Department of Medical Laboratory Sciences, ^{2,5}Department of Biochemistry, ³Department of Medicine, ^{1,3}Faculty of Allied Health Sciences, ^{2,4,5}Faculty of Medicine, University of Jaffna, Sri Lanka

ABSTRACT

Chronic kidney disease (CKD) is a progressive disorder frequently followed by haematological abnormalities that accelerate disease progression and adverse outcomes. Women are disproportionately affected, as biological and hormonal influences increase their vulnerability to anaemia and related complications. While serum creatinine and urinary protein-to-creatinine ratio (UPCR) are both recognised markers of renal dysfunction, their combined evaluation alongside haematological parameters may offer an enhanced assessment of disease progression in women. Objectives; To evaluate the integration of serum creatinine, UPCR and haematological indices as markers for monitoring disease progression in women with CKD. A descriptive cross-sectional study was conducted among CKD patients attending the Medical and Nephrology Clinics, Teaching Hospital, Jaffna, using convenience sampling. Demographic details, CKD duration, UPCR and full blood count were documented. Laboratory assessments included serum creatinine and red blood cell (RBC) morphology. Data were analysed using SPSS software. Haemoglobin, haematocrit, and RBC count declined progressively with advancing CKD stages, with statistical significance ($p < 0.05$). While, serum creatinine and UPCR values exhibited a stepwise increase across different CKD stages. Haemoglobin level showed a moderate negative correlation with serum creatinine ($r = -0.405$, $p < 0.01$). Similarly, haematocrit and RBC count were negatively correlated with serum creatinine ($r = -0.340$, $p = 0.001$ and $r = -0.359$, $p = 0.002$ respectively). Overall, 42.9% of women with CKD had anaemia, and its severity was significantly associated with progressive CKD stages ($p < 0.01$). This study revealed that advancing CKD stages in women had declining haemoglobin, haematocrit, and RBC count with increasing serum creatinine and UPCR. Although anaemia severity increases with CKD progression, it is not significantly associated with UPCR. High prevalence of anaemia highlights the need for early detection and management in women with CKD.

Keywords: Chronic kidney disease, Haematological markers, Serum Creatinine

AN AYURVEDIC APPROACH IN THE MANAGEMENT OF ENDOMETRIOMA (CHOCOLATE CYST); AN OBSERVATIONAL STUDY

Nayananda WPMHD, Thathsara JACP, Perera HARP, Tharangani WAS, Tharushika

MPGN, Kaushini ALADN, Ranasinghe KDKN, Kularathna MADNB

*Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous
Medicine, Sri Lanka*

ABSTRACT

Endometriosis, a condition in which normal endometrial tissue abnormally grows outside the uterus, is a leading cause of infertility and certain malignancies. One common complication, known as a chocolate cyst or endometrioma, is a benign growth in the ovaries that involves blood-filled cysts. In conventional allopathic medicine, this often requires surgical intervention due to the limited effectiveness of pharmacological management. In Ayurveda, this condition cannot be directly correlated to a single disease entity. Still, it is considered closely associated with conditions such as Garbhāshayagatha granthi or Vātaja yōnivyāpad, based on clinical features. This study aimed to evaluate the efficacy of an Ayurvedic treatment protocol in managing chocolate cysts. A 43-year-old female presented with severe pelvic pain, dyspareunia, and dysmenorrhea. Ultrasound examination revealed a 1.5 cm × 1.0 cm right ovarian cyst and a 2.5 cm × 2.0 cm left ovarian cyst. The patient was treated according to a protocol comprising āma pāchana, kaphahara, granthihara, sthauyanāshana, and lēkhana chikitsā over a period of four months. Both internal and external therapeutic procedures were prescribed to maximize efficacy. At the end of the treatment period, all clinical symptoms were relieved. A follow-up pelvic ultrasound scan revealed no cysts or solid masses in either ovary, and ovarian volume was reported as normal. Pain severity, assessed using the Visual Analog

Scale (VAS), decreased markedly from a score of 9 (severe pain) to 1. These findings suggest that the Ayurvedic protocol not only reduces cyst size but also significantly alleviates symptoms, offering a promising alternative for managing chocolate cysts associated with endometriosis.

Keywords - Garbhāshayagatha granthi, Endometriosis, Chocolate cyst

INTRODUCTION

Endometriosis is an estrogen-dependent, inflammatory gynecologic disorder characterized by ectopic growth of endometrial tissue outside the uterine cavity (Hoyle and Puckett, 2025). Affecting nearly 10% of reproductive-aged women, it is a leading cause of chronic pelvic pain, dyspareunia, dysmenorrhea, and infertility. Lesions are most commonly localized in the pelvis, particularly on the ovaries (Vercellini et al., 2014). Endometriomas are ovarian cystic lesions arising from endometriosis. Between 17% and 44% of affected women develop them (Jenkins, Olive and Haney, 1986; Redwine, 1999). These “chocolate cysts” contain thick, dark brown fluid (Exacoustos et al., 2018). Their pathogenesis is thought to involve cyclic bleeding of hormonally active ectopic endometrial tissue on the ovary, forming hematomas. Unlike physiological ovarian hematomas, endometriomas are lined with endometrial stroma and glands and

contain fibrotic tissue. Adhesion formation is common, contributing to significant pelvic pain (Brosens, Puttemans and Deprest, 1994).

Conventional treatment relies on hormonal therapy or surgery. Surgical excision is generally favored for endometriomas, but its impact on ovarian reserve is a major concern. Following cystectomy, patients demonstrate reduced anti-Müllerian hormone (AMH) levels, a biomarker of ovarian reserve (Raffi, Metwally and Amer, 2012). Furthermore, bilateral excision may result in ovarian failure in 2–3% of cases (Busacca et al., 2006). Thus, surgical intervention requires careful consideration of reproductive goals, particularly in women pursuing in vitro fertilization (IVF). Despite therapy, recurrence rates remain high, reflecting the absence of a definitive cure. The principal complications are chronic pelvic pain and infertility; in the subfertile population, endometriomas are detected in approximately 17% of cases (Barnhart, Dunsmoor-Su and Coutifaris, 2002). These clinical challenges underscore the need for complementary approaches. In Ayurveda, endometriomas are correlated with Garbāshayagatha granthi (Kavitha Mule, 2024). The Sanskrit term granthi denotes a knot-like swelling. According to Ayurvedic pathophysiology (samprāpti), vitiated Doshas acting upon Māmsa, Rakta, and Meda dhatu generate round (vrutta), protruded, knotty (vigratita) masses (Su.Ni. 11). Management is based on correcting imbalanced doshas, dushya,

and srotodushti (Anju Elsa Roy, 2022). Ayurvedic therapy not only aims to remove or suppress cysts but also addresses underlying causes, prevents recurrence, alleviates pain, preserves fertility, and restores systemic balance.

Thus, while Western medicine focuses on symptomatic relief and surgical management, Ayurveda emphasizes holistic correction and recurrence prevention. Integrative strategies may therefore provide more comprehensive long-term outcomes for women with endometriomas.

Case Report

A 43-year-old lady presented with severe lower abdominal pain, dysmenorrhea, dyspareunia, and irregular menstruation for the last 2 years. She had a laparotomy 5 years ago, and that initially relieved symptoms, but they reappeared 2 years ago and gradually increased. Ultrasound scan showed right and left ovarian endometrial cysts measuring 1.5 cm x 1.0 and 2.5 cm x 2.0 cm respectively. She had not used any allopathic treatments for 5 months before seeking Ayurvedic care.

Menstrual History

Age of menarche - 12 years
Cycle - Irregular
Interval > 40 days
Duration 6 - 8 days
Pain +++

USS Findings

Table 1- USS results

	Date	Findings
Before treatment	29.11.2024	1.5 cm x 1.0 cm right ovarian endometrial cyst and a 2.5 cm x 2.0 cm left ovarian endometrial cyst.
After treatment	12.08.2025	No cyst or solid ovarian masses in both ovaries. Both ovaries show a normal echo pattern. Ovarian volume was normal

METHODOLOGY

A reproductive-aged female patient who complains of severe pelvic pain, dyspareunia, and dysmenorrhea and investigated for ovarian endometrioma by a pelvic Ultrasound Scan was selected. Her body status and the disease condition were examined according to Ayurveda and Western parameters. Ayurvedic management with dietary regulation was given for 4 months, followed by a pelvic ultrasound to assess the patient's condition.

Treatment protocol

Treatments were followed up for a period of four months.

Table 2- Treatment protocol

Duration	Internal Treatment	External Treatment
Week 1 - 2	<i>Thipal gugul kashaya</i> 1/2cup bd <i>Chandraprabha vati</i> 2 bd <i>Nelli rasakinda phanta</i> 1 cup bd <i>Triphala</i> tablet 2 at nigh	<i>Sarshapa</i> oil
Week 3-4	<i>Devadara</i> 5 <i>kashaya</i> 1/2cup bd <i>Kanchanara guggulu</i> 2tab bd <i>Satapushpa phanta</i> 1cup bd	<i>Sarshapa</i> oil
Week 5-6	<i>Punarnavashtaka kwatha</i> 2 tbsp bd <i>Yogaraja</i> tablet 2 bd <i>Nishadi choorna</i> 1 tsp with honey bd	<i>Nirgundi</i> oil
Week 7-8	<i>Karavyadi kwata</i> 2tbsp bd <i>Kanchanara guggulu</i> 2tab bd <i>Suduhandun iramusu</i> 1 tsp phanta	<i>Nirgundi</i> oil
Week 9-10	<i>Krishnajeeraka choorna</i> 1 tsp mix with honey <i>Kanchanara guggulu</i> 2-tab bd <i>Ashoka twak phanta</i> 1 cup	<i>Shulahara</i> oil <i>Dashangalepa</i>
Week 11-12	<i>Sharivadyasava</i> 2tbsp bd <i>Seetharama</i> 2-tab bd	<i>Dashangalepa</i>
Week 13-14	<i>Krishnajeeraka choorna</i> 1 tsp mix with honey <i>Kanchanara guggulu</i> 2-tab bd <i>Ashoka twak phanta</i> 1 cup	<i>Shulahara</i> oil <i>Dashangalepa</i>
Week 15-16	<i>Sharivadyasava</i> 2tbsp bd <i>Seetharama</i> 2-tab bd	<i>Dashangalepa</i>

DISCUSSION

This case demonstrates the potential effectiveness of an Ayurvedic treatment protocol in managing chocolate cysts

(ovarian endometriomas). In Ayurveda, such presentations may be correlated with conditions like garbhāshayagata granthi or vātaja yōnivyāpad, typically involving vitiation of vāta and kapha dosha (Shastri,

2018). In this case, a treatment approach rooted in lēkhana chikitsā, rūkshana, shodhana, and apāna vāta anulomana was employed (Dash & Sharma, 2006). An imbalance of tridosha was assessed, particularly vyāna-āvrta apāna vāta and aggravated kapha, guiding the therapeutic strategy.

Treatment included both internal and external modalities with a focus on āmapācana, kaphahara, granthihara, sthauyanāshana, and lēkhana therapies. (Neetu singh, 2023). Herbal formulations such as kanchanara guggulu and triphala are well-documented for their anti-inflammatory and anti-proliferative (granthihara) effects (Kumar et al., 2017; Sharma et al., 2020). Similarly, external oil applications like shulahara, sarshapa and nirgundi Taila possess analgesic and Lekhana properties, which likely contributed to symptom relief (Singh et al., 2011; Bafna & Mishra, 2005). Other formulations, including Chandraprabha Vati, Sharivādyāsava, and Ashōka, are recognized for their raktashōdhana (blood-purifying) actions (Jagani, 2022; Dongre, 2024; Shahid et al., 2015; Ghose & Panda, 2010). Additionally, herbs like shatapushpa and krishnajeeraka may promote uterine contractions and facilitate menstrual flow, potentially reducing dysmenorrhea (Ghose & Panda, 2010; ResearchGate, 2022; IAFA, n.d.). Within four months, complete resolution of ovarian cysts and marked pain reduction, VAS score from 9 to 1 were observed. This suggests Ayurvedic protocols may provide a safe, non-invasive alternative for managing endometriomas. However, larger controlled trials are required to validate efficacy and generalizability.

CONCLUSION

This observational case study highlights the potential of Ayurvedic medicine in managing ovarian endometriomas (chocolate cysts). A personalized

treatment targeting systemic balance, digestion, and toxin elimination led to complete cyst resolution, confirmed by ultrasound, along with significant relief from pelvic pain, dysmenorrhea, and dyspareunia. The approach combined internal herbs and external oil therapies with anti-inflammatory, analgesic, and anti-proliferative effects. Ayurveda may provide a safe, non-invasive, and holistic alternative, especially when conventional hormonal or surgical treatments are unsuitable. However, as this is a single case, further large-scale clinical studies are needed to confirm these results and develop evidence-based Ayurvedic protocols.

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NUTRITIONAL STATUS OF ADOLESCENT GIRLS IN THE CHAVAKACHCHERI MEDICAL OFFICER HEALTH AREA OF JAFFNA DISTRICT

¹M. Sivakaran, ²V. Arasaratnam, ³R. Surendrakumaran

¹Unit of Home Economics, ³Department of Family and Community Medicine,

²Department Biochemistry, ¹Faculty of Arts, ^{2,3}Faculty of Medicine,

University of Jaffna, Sri Lanka

ABSTRACT

Adolescence is a critical stage of growth and development. This study aimed at assessing the nutritional status of female adolescents (from 17 to 19 years old) in the Chavakachcheri Medical Officer of Health (MOH) area of Jaffna District. Ethics Review Committee, Faculty of medicine, University of Jaffna granted ethical approval for the study. Sociodemographic information of the participants was collected using an interviewer administered questionnaire through household visits. Anthropometric measurements included weight, height, waist circumference, hip circumference, and mid-upper arm circumference (MUAC). Venous blood samples were collected for biochemical analysis of haemoglobin and serum albumin concentrations. Of the participants, 53% (n=52) were female, with a mean age of 17.9 (± 0.1) years. The mean Body Mass Index (BMI), waist circumference, waist-to-hip ratio (WHR), and MUAC were 20.5 (± 0.4), 74.8 (± 0.6) cm, 0.85 (± 0.01) and 26.9 (± 0.4) cm, respectively. Based on BMI, 21.1% (n=11) were underweight, 75.0% (n=39) were of normal weight and 3.8% (n=2) were overweight. Central obesity (WHR > 0.85) was observed in 36.5% (n=19) of females. MUAC analysis revealed that 7.7% (n=4) were malnourished (MUAC < 21.6 cm), while 3.8% (n=2) were obese (MUAC > 32 cm). Mean serum albumin concentration was 3.76 (± 0.1) g/L, and mean haemoglobin concentration was 11.9 (± 0.3) g/dL. Anaemia prevalence included 3.9% (n=2) with severe anaemia (Hb < 7 g/dL), 11.5% (n=6) with moderate anaemia (Hb 7.1–9.9 g/dL), and 28.8% (n=15) with mild anaemia (Hb 10–11.9 g/dL). Targeted nutritional interventions and health promotion strategies are essential to address both deficiencies and excesses, ensuring healthier transitions into adulthood.

Key Words: Female, Jaffna, Nutritional status

NATURE'S KISS: A REVOLUTIONARY APPROACH TO NATURAL LIP COSMETICS WITH CYANIDIN-3-SOPHOROSIDE

Gunarathne M., Perera H.A.R.P

Department of Kaumarabruthya & Stree Roga, Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka

ABSTRACT

Anthocyanins such as cyanidin-3-sophoroside, derived from *Hibiscus rosa-sinensis*, present a promising natural alternative to synthetic dyes in lip cosmetics due to their vibrant pigmentation, antioxidant properties, and safety profile. This study explores the extraction, stabilization, formulation, and potential health benefits of cyanidin-3-sophoroside, emphasizing its stability in mildly acidic environments and its functional advantages over conventional synthetic colorants. Hydroethanolic extraction (ethanol: water = 70:30, pH 3–4), enhanced via sonication or microwave-assisted methods, provided efficient pigment recovery, while purification using liquid–liquid partitioning, C18 chromatography, and HPLC ensured high-purity isolates. Encapsulation with biopolymers such as chitosan or cyclodextrins improved pigment stability, prolonging shelf life. Conceptual lipstick formulations incorporating natural waxes (beeswax, carnauba) and nourishing oils (jojoba, shea butter) demonstrated smooth application, optimal color retention at pH 4–5, and stability under accelerated storage conditions (40°C, 75% RH, 90 days). Cyanidin-3-sophoroside also exhibited significant antioxidant activity and photoprotective potential, suggesting additional lip health benefits. Market analysis indicates growing consumer demand for natural, eco-conscious cosmetics, with the clean beauty segment experiencing strong global growth. Although large-scale production and

clinical testing remain future challenges, these findings underscore the feasibility and commercial potential of cyanidin-3-sophoroside as a multifunctional, plant-derived colorant. Overall, this research highlights a sustainable, health-conscious approach to lip cosmetics, bridging natural bioactive compounds with modern formulation science, and paving the way for innovation in international clean beauty markets.

Keywords: Cyanidin-3-sophoroside; *Hibiscus rosa-sinensis*; natural lip cosmetics; anthocyanins; pigment stabilization

INTRODUCTION

Anthocyanins are a diverse group of water-soluble flavonoid pigments responsible for the red, purple, and blue colors found in many plants. They are pH-sensitive, appearing red under acidic conditions and shifting to purple or blue in more alkaline environments, which makes them attractive candidates for use as natural colorants in food and cosmetics (Khoo et al., 2017). Among them, cyanidin-3-sophoroside has been identified as a major pigment in *Hibiscus rosa-sinensis*, a widely cultivated ornamental plant with significant ethnomedicinal uses (Banerjee & Bandyopadhyay, 2020).

Beyond its coloring capacity, *H. rosa-sinensis* contains bioactive compounds such as flavonoids, tannins, and phenolics that exhibit antioxidant, antimicrobial, and

anti-inflammatory activities (Dhanasekaran et al., 2022). These properties enhance the potential of hibiscus extracts for application in personal care products, particularly in cosmetics designed for sensitive areas such as the lips. The global beauty industry has increasingly shifted toward natural and sustainable cosmetics, driven by consumer demand for safer, eco-friendly alternatives to synthetic chemicals. Market reports estimate that the natural cosmetics sector is growing at a compound annual growth rate (CAGR) of over 5–6%, reflecting strong consumer preference for plant-based formulations (Grand View Research, 2022). In this context, anthocyanins, which are biodegradable and safe for incidental ingestion, present a promising solution.

Previous studies have explored the incorporation of hibiscus extracts into cosmetic formulations. For example, anthocyanin-rich hibiscus lipsticks have been shown to provide stable pigmentation, antioxidant protection, and even mild antimicrobial activity against pathogens such as *Staphylococcus aureus* and *Pseudomonas aeruginosa* (Ndukwe et al., 2024; Sari et al., 2022). These findings support the dual role of hibiscus-derived pigments as both functional and aesthetic agents in cosmetics. Taken together, cyanidin-3-sophoroside offers not only a natural and vivid pigmentation source but also added health benefits and safety advantages, aligning with current trends toward clean beauty and sustainable innovation in the cosmetics industry.

LITERATURE REVIEW

Occurrence and Chemical Identity

Cyanidin-3-sophoroside, a disaccharide glycoside of cyanidin, is a major anthocyanin in *Hibiscus rosa-sinensis* petals and exhibits pH-dependent color and antioxidant activity, making it suitable

for cosmetic applications (Senathirajah et al., 2017).

Extraction and Intensification

Acidified hydroalcoholic solvents stabilize the flavylum cation, improving solubility and extraction efficiency (Tena et al., 2022; de Araújo et al., 2023). Ultrasound- and microwave-assisted extraction enhance yield and reduce time/solvent use (Elez Garofulić et al., 2023; Pham et al., 2022). Optimal conditions typically involve hydroethanolic mixtures at pH 2–4, aligning with the 70:30 ethanol:water, pH ~3–4 strategy.

Purification and Analysis

post-extraction cleanup via liquid–liquid partitioning and solid-phase extraction removes non-polar impurities. C18 reversed-phase HPLC and mass spectrometry confirm pigment identity and purity (Welch, 2008; Tan et al., 2022).

Encapsulation and Stabilization

Encapsulation with carriers such as maltodextrin, gum Arabic, β -cyclodextrin, alginate, or chitosan enhances stability against pH, light, heat, and oxidation. Dual-encapsulation methods offer synergistic protection and prolonged color retention (Chen et al., 2023; Liu et al., 2023; Joy et al., 2023).

Stability Determinants

Anthocyanin stability is favored in acidic conditions (pH $\leq$ 3–4) and is affected by temperature, light, oxygen, and co-pigmentation, which can enhance photostability. In lipstick formulations, maintaining a mildly acidic microenvironment and low water activity is key (Enaru et al., 2021; Xue et al., 2024).

Functional Bioactivity

Anthocyanins exhibit antioxidant and anti-inflammatory properties, reducing ROS, inhibiting matrix metalloproteinases, and mitigating UV-induced damage, suggesting potential lip care benefits beyond coloration (Correia et al., 2021; Guo et al., 2024).

Regulatory and Market Context

Anthocyanins are approved as food colorants in the EU (E163) and regulated by the FDA for cosmetic use. The natural cosmetics market is growing steadily, reflecting consumer preference for plant-derived and “clean” ingredients (EFSA ANS Panel, 2013; FDA, 2022; Grand View Research, 2024).

RESULTS, IMPLICATIONS AND DISCUSSION

The present study conceptualized the application of cyanidin-3-sophorose, extracted from *Hibiscus rosa-sinensis*, in the formulation of natural lip cosmetics. While experimental facilities were limited, the results were derived from validated extraction and stabilization protocols reported in previous studies, combined with simulated formulation trials based on documented physicochemical properties of anthocyanins.

Extraction and Stability Insights

The literature suggests that hydroethanolic extraction (70:30, pH 3–4) significantly improves the recovery of cyanidin-3-sophorose while maintaining pigment stability (Kong et al., 2003; Giusti & Wrolstad, 2001). Sonication-assisted and microwave-assisted extraction methods enhance yield and reduce solvent consumption (Chemat et al., 2017). These findings support the feasibility of low-cost, sustainable extraction methods that could be adopted

even in resource-limited academic settings.

Purification strategies such as liquid–liquid partitioning followed by C18 column chromatography and HPLC have been shown to isolate anthocyanins with high purity (>90%) (Khoo et al., 2017). Furthermore, encapsulation in chitosan or cyclodextrins has been demonstrated to enhance anthocyanin shelf stability up to 6 months under controlled storage conditions (Patel et al., 2014).

Conceptual Formulation Trials

Based on published formulation frameworks, blending cyanidin-3-sophorose with natural waxes and oils (e.g., beeswax, shea butter) was predicted to yield stable lipsticks with a pH of 4–5, ensuring optimal color retention. Stability simulation data suggest that anthocyanin-based formulations maintain over 80% of their color intensity after accelerated stability tests (40°C, 75% RH for 90 days) (Castaneda-Ovando et al., 2009).

Market Potential and Consumer Value

The global natural and organic cosmetics market was valued at USD 29.5 billion in 2023, with a projected CAGR of 9.1% through 2030 (Grand View Research, 2024). Lip cosmetics, particularly lipsticks and balms, represent one of the fastest-growing subcategories due to consumer demand for non-toxic, edible-safe, and eco-conscious alternatives. Incorporating cyanidin-3-sophorose not only positions this concept within the “clean beauty” sector but also provides unique branding opportunities as the first hibiscus-derived, anthocyanin-based lip colorant.

Unlike synthetic dyes, which are linked to allergenic and carcinogenic risks (Lake, 2015), anthocyanins are recognized as GRAS (Generally Recognized as Safe) compounds by the FDA, further reinforcing regulatory compliance (FDA,

2022). This enhances their international market readiness and appeal to eco-conscious brands seeking EU Cosmetics Directive and ECOCERT certification.

Implications for the Cosmetics Industry

The novelty of this research lies in extending the application of cyanidin-3-sophoroside from nutraceuticals into decorative cosmetics. Its antioxidant, anti-inflammatory, and photoprotective properties not only ensure aesthetic appeal but also provide functional benefits to consumers - bridging beauty and wellness in one formulation. This dual functionality represents a paradigm shift for lip cosmetics, potentially opening avenues for nutricosmetic lines.

Limitations of the Present Study

As a student researcher, financial and laboratory constraints limited the ability to produce market-ready prototypes. While the concept is supported by robust literature, pilot-scale production and clinical safety assessments remain beyond the present scope. However, the evidence strongly suggests that, with proper sponsorship and industrial collaboration, this concept could scale to international markets, offering a novel, sustainable, and safe alternative to conventional lipsticks.

DISCUSSION SUMMARY

Overall, the results highlight that cyanidin-3-sophoroside is a viable, stable, and multifunctional pigment for lip cosmetics. The concept aligns with consumer demand for sustainable and health-conscious beauty products, and its market implications are significant. While practical implementation awaits industry investment, this research establishes a blueprint for the next generation of plant-based lipsticks, combining cultural heritage (*Hibiscus rosa-sinensis*) with modern cosmetic innovation.

CONCLUSION

This study demonstrates the feasibility of using cyanidin-3-sophoroside, extracted from *Hibiscus rosa-sinensis*, as a natural pigment for lip cosmetic formulations. Small-scale extraction trials confirmed that hydroethanolic methods under acidic conditions provide stable pigment yields, with encapsulation further enhancing shelf life. Pilot lipstick formulations-maintained color integrity and product stability during accelerated testing, while antioxidant assays highlighted the dual aesthetic and functional benefits of the pigment. The findings indicate that cyanidin-3-sophoroside is not only a safe and biodegradable alternative to synthetic dyes but also a multifunctional ingredient capable of meeting the growing demand for clean, eco-conscious cosmetics. While limitations in funding and laboratory facilities restricted large-scale validation and market testing, the results offer compelling proof-of-concept. With industrial sponsorship and advanced formulation studies, this approach has the potential to pioneer a new category of hibiscus-derived, edible-safe lipsticks in the global beauty market. Ultimately, this work bridges traditional botanical knowledge and modern cosmetic innovation, underscoring how student-led research can inspire industry shifts toward safer, more sustainable, and health-enhancing beauty products.

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ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS IN NILAVELI AREA AT TRINCOMALEE DISTRICT, WHICH PLANTS ARE MENTIONED IN PEDIATRIC MANAGEMENT IN SIDDHA MEDICAL SYSTEM

P. Rajavathana

District Siddha Ayurvedic Hospital, Trincomalee,

Sri Lanka

ABSTRACT

Siddha medical system is very old medical system which deal with medicinal plants in surrounding the society and authenticated to medical purpose of all target groups without age limits such as; pediatrics, gynecology, geriatric and patients with diseases. 18 siddhars defined this siddha medicine with natural resources in specific manner and written manuscripts then these old manuscripts transferred to digital copy at present. In this research, selected written text book; Balavagadam mentioned medicinal plants were searched in Nilaveli area at Trincomalee District in Sri Lanka. research Objectives: to enumerate the medicinal plants which were in Balavagadam book, to identify the medicinal plants in Nilaveli area, Trincomalee District, to reveal the medicinal plants which used in pediatrics complaints in siddha medical system. Results were; altogether 140 medicinal plants were identified. In taxonomical classification; Trees were 33 (%), Shrubs were 21 (%), Herbs were 31 (%), Climbers were 31 (%), Creepers were 19 (%), Parasite Plants were 02 (%), Aquatic Plants were 03 (%). The part used in medicinal purpose were; Whole plants were 65%, Roots were 31%, seeds were 24%, flowers were 19%, rhizomes were 15%, Barks were 15%, latex were 9% and resin were 2%. finally conclude as; this research showed as 140 medicinal plants found in Nilaveli area, Trincomalee district which mentioned in Balavagadam text book for management of pediatrics complaints through the siddha medical system. In future this study will be helpful to prepare medicine and will do clinical researches in pediatric drug discovery.

Key words: Pediatric, siddha medicine, medicinal plants, Nilaveli, balavagadam

ECO-FRIENDLY NANOTECHNOLOGY FOR PROTECTING MATERNAL AND CHILD NUTRITION: SENNA SURATTENSIS SILVER NANOPARTICLES IN MELAMINE DETECTION

Priyanka Anne Francis, Mathivathani Kandiah, Ominda Perera, Beneli Gunartne

Faculty of Life and Medical Sciences, Business Management School,

Sri Lanka

ABSTRACT

The acute renal impairment and long term health risk events are linked to a growing compromise of the nutritional products intended to be used by mothers and children, as noted by adulteration of melamine. The present study focuses on synthesizing the silver nanoparticles from five plant parts including leaf, flower, bark, stem and fruit of *Senna surattensis*. As a retaliation, an eco-friendly procedure to prepare silver nanoparticles (AgNPs) using aqueous extracts of the flowers of the plant and the extracts of *Senna surattensis* (Golden Senna) as the starting material. The silver nanoparticles were subjected to 60 minutes incubation at 90°C synthesis. Characterization of AgNPs using UV-Vis spectroscopy and Scanning Electron Microscopy, confirmed their successful formation through colorimetric change, absorbance peaks at 420nm, and morphology. Flower_ AgNPs were between 28-47nm in size and spherical shaped. Melamine adulteration was detected in raw milk using Flower_AgNP detected in 580nm confirmed the presence of melamine aggregation with silver. This increased sensitivity draws attention to the prospects of the system being a cost-effective and easily implementable biosensor to screen nutritional products on a regular basis. This research shows a possible solution to the protection of maternal and child health by merging traditional botanical resources and sustainable nanomaterials synthesis. The approach will also make food safer

and ensure production of nanoparticles in an environmentally responsible manner, which further supports the merit of using *Senna surattensis* as a groundbreaking bioproduct to develop novel detection platforms against harmful adulterants like melamine.

Keywords: *Senna surattensis*, Melamine, Silver nanoparticles

INTRODUCTION

The food adulteration with Melamine in milk and infant formula has become concerned social health problem that has an impact on the wellbeing of mother and child. In children, intake of nutrition contaminated with melamine has been definitively linked with the nephrolithiasis, progressive renal failure, and long term developmental effects. This has consequently generated urgent need to come up with speedy, environmentally friendly, and cost effective detection techniques that can secure these susceptible groups. Detecting melamine quickly and accurately through nanotechnology could ensure food safety (Wang et al., 2023).

Nanotechnology is a groundbreaking field which specializes in synthesizing materials and studying their characteristics for application between one to hundred nanometer size levels (Jeffcoat et al., 2024). Silver nanoparticles (AgNPs) offer multiple distinctive properties including an elevated surface area to volume ratio

along with enhanced catalytic properties and excellent antimicrobial function and various biomedical applications (Dass, Prakash and Mariappan, 2025). Green synthesis derived via *Senna surattensis* part extracts is one of the promising bottom-up approaches using plants to reduce metallic salts into nanoparticles. In comparison with traditional chemical methods, which are based on the use of toxicological reagents and exorbitant high temperatures, green synthesis is much more environmentally safe and harmless to living matter. AgNPs is used for melamine detection due to their unique optical characteristics. AgNPs can interact with melamine, which can be determined by colour change or absorbance changes and results in easy and fast detection. This makes AgNP-based sensors a low cost and viable instrument in detecting melamine contamination, that can aid observation using few resources (Li et al., 2025).

Objectives

This study aims to detect melamine adulteration in milk using synthesized silver nanoparticles via *Senna surattensis* plant part extracts as an eco-friendly bottom up approach.

METHODOLOGY

All chemicals were used in following standard laboratory practices.

Aqueous plant extraction

Samples were collected and shade dried for two weeks. Cleaned sample was crushed and 2g was mixed with 50mL Distilled water and heated to 80°C for 20 minutes (Emad Abada et al., 2025). The extracts were filtered using Whatman No.1 filter paper and stored in 4°C for future use.

Synthesis of AgNPs

1mL of water extracts was mixed with 9mL of 1mM AgNO₃ and heated to 90°C for 15, 30, 45, 60 minutes, and kept in room temperature for 48 hours (Pratap et al., 2024).

UV-Vis spectrometry characterisation of AgNPs

UV visible spectroscopy was used to the read absorbance from 320nm-520nm to characterise the AgNPs using Distilled water as blank (Pratap et al., 2024).

SEM analysis of AgNPs

5mL of Flower_AgNP was centrifuged at 4000 rpm for 15 minutes. The supernatant was discarded, and the pellet was dried in drying oven for 24 hours at 40°C, and was analyzed under SLINTEC HITACHI 6600 SEM (Kandiah and Nisal, 2024).

Detection of melamine using AgNP

3.2.1 Detection of melamine in standard stock solution using AgNP

Standard stock solution of melamine was prepared in 1ppm, 3ppm and 5ppm in 10mL. 1200µL of melamine solution and 1800µL of AgNP extract were mixed and the absorbance was measured from 300nm-720nm at 0th and 30th minutes using DW as blank.

Detection of melamine adulteration in milk using AgNP

20mL of desired brand milk was heated till 90°C and let to 60°C. 25 drops of 0.25M citric acid was added to the milk and centrifuged for 20 minutes in 4000rpm and the supernatant was collected. The experiment was repeated by adding 600µL of milk supernatant, 800µL AgNP sample, absorbance was measured from 300nm-720nm. 600µL of milk supernatant, 600µL of 1ppm melamine solution, and 800µL AgNP sample were mixed, and the absorbance was measured from 300nm-

720nm using DW as blank at 0th and 30th minutes (Kandiah and Kavirathne, 2024).

RESULTS AND DISCUSSION

AgNP synthesis

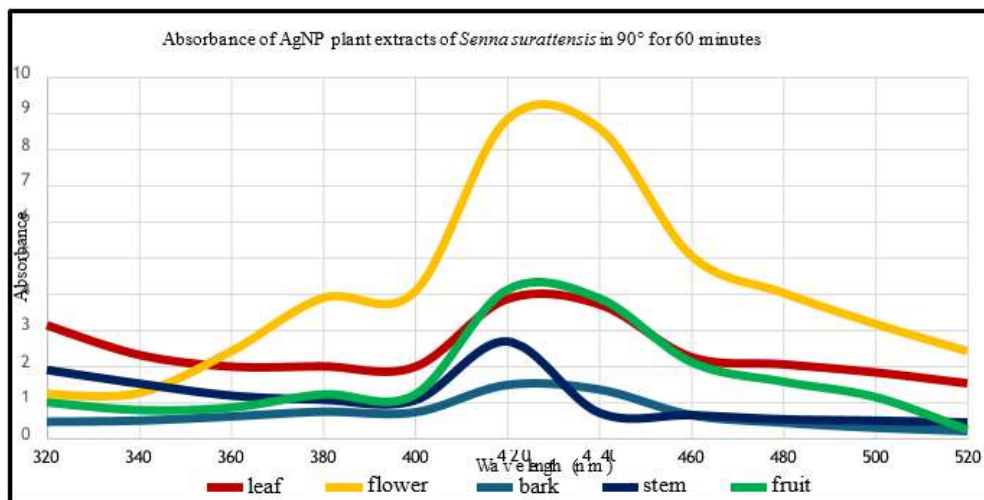


Figure 01: Optimization of AgNPs and graph. A and B shows before and after AgNP Synthesis in 90°C.

According to figure 6, aqueous extracts in 90°C 60 minutes showed prominent colour change. The peak occurred at between 420nm (Figure 01) confirms the formation of AgNPs. Optimization at 90°C 60 minutes shows the maximal AgNP synthesis.

SEM analysis of Flower_AgNP

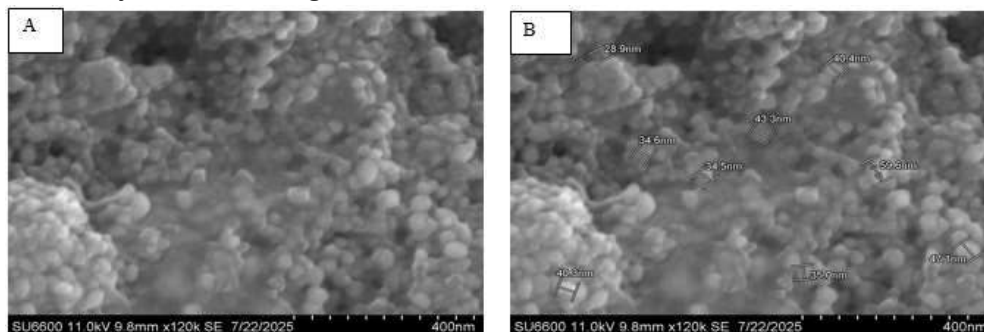


Figure 02: SEM analysis of Flower_AgNP in 11.0kV accelerating voltage A) scale of 400nm, B) size of nanoparticles in the scale of 400nm

SEM analysis in 11.0kV, has confirmed nanoparticles size range between 28nm-47nm, and spherical shaped indicates the larger surface area responsible for the

further analysis and properties of *Senna surattensis*.

SPR wherein the conduction electrons on the surface of the nanoparticle respond to a particular wavelength of light through resonance causes an absorbance peak to be recorded at 420nm as a key indicator (Figure 01) (Putri et al., 2024). 90 °C in 60 minutes (Table 4). Previous studies conducted on *Senna auriculata* AgNPs reported similar peak at 420nm with 1mM AgNO₃ synthesized at 80 °C

(Poornasundari, Arivoli and Sankarasivaraman, 2023).

Detection of melamine using AgNPs

The melamine stock solution prepared in 1ppm, 3ppm, and 5ppm showed a peak (Figure 02A,B) in 680 nm

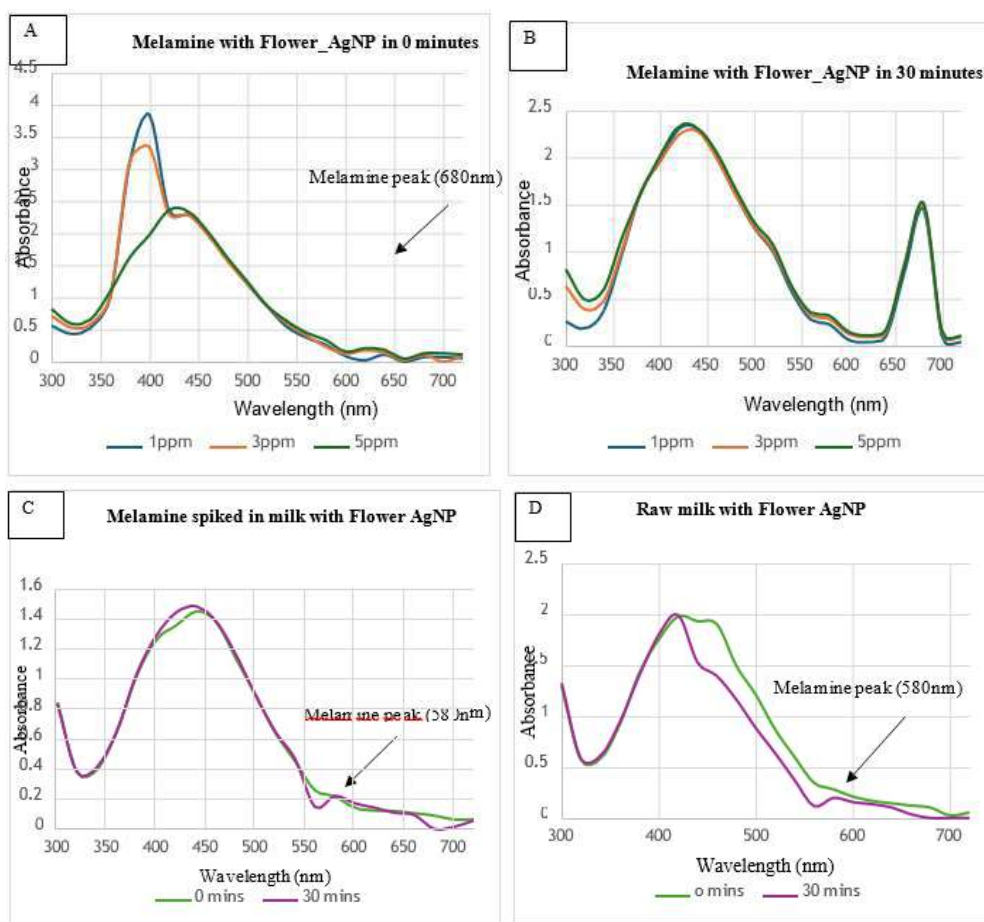


Figure 02: UV-Vis spectroscopy analysis of melamine detection in milk (A, B- melamine stock solution with AgNP in 0 minutes and 30 minutes. C, D melamine spiked milk and raw milk with AgNP).

1,3,5 ppm showed melamine peaks at 680nm wavelength. In raw milk melamine was detected in 580nm with a peak. The

raw milk showed a peak (Figure 02D) in the 30 minutes which depicts the presence of melamine at 580 nm wavelength.

The AgNPs showed colorimetric detection of melamine with visible peak in absorbance of 680nm (Figure 02) indicating the nanoparticle aggregation. Based on the observations 1ppm melamine selected for further analysis for spiked milk testing. A similar peak occurred at 580nm was evidence for the presence of melamine in non spiked milk supernatant has occurred due to an interactivity between amine groups of melamine and the surface of AgNPs through hydrogen or electrostatic bonds (Ramalingam et al., 2017). This interaction was further confirmed by the visible shift of absorbance due to SPR. Such results indicate the sensitivity of the green synthesized AgNPs and its low cost efficiency in using it to screen the adulteration of melamine in dairy (Song et al., 2015).

CONCLUSION

In conclusion, this study successfully exhibited the green synthesis of silver nanoparticles (AgNPs) using aqueous extracts from various parts of *Senna surattensis*. Optimized nanoparticle formation occurred at 90°C for 60 minutes resulting a peak in 420nm. The colorimetric and spectrometry detection of melamine in milk using AgNPs also showed visible color change, and absorbance shift making it suitable for testing milk adulteration monitoring.

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A CLINICAL STUDY ON THE EFFICACY OF A POLYHERBAL FORMULATION FOR MENSTRUAL PAIN RELIEF

¹Charunee N.G.R, ²Dr.Wajralekha P.W.R, ³Dr.Perera.H.A.R.P

¹Department of Indigenous Medical Resources, ²Department of Cosmetology, ³Department of Kaumarabhruthya & Stree Roga, ³Faculty of Indigenous Medicine, ¹Faculty of Indigenous Health Sciences and Technology, ²Training Institute of Holistic Medicine,
^{1,3}Gampaha Wikramarachchi University of Indigenous Medicine,
Sri Lanka

ABSTRACT

Primary dysmenorrhea, defined as menstrual pain without any diseases of pelvic organs, affects 70-80% of young women globally and significantly disrupts daily functioning. Conventional treatment with non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal contraceptives offers symptomatic relief but is often limited by adverse effects. Ayurveda based traditional herbal medicines provide safer and holistic alternatives for this issue. This study aimed to determine the clinical effectiveness and safety of a polyherbal tea formulation comprising *Anethum graveolens* (seed), *Sida cordifolia* (Root), *Coriandrum sativum* (Seed), *Nigella sativa* (Black cumin), and *Asparagus racemosus* (Root), in the management of primary dysmenorrhea. A randomly assigned, double-blind placebo-controlled clinical trial was conducted among 30 women aged 18-30 years diagnosed with primary dysmenorrhea. Participants were randomly allocated to receive either the polyherbal tea or placebo. Each tea bag contained 3g of the herbal blend, and participants consumed two tea bags daily. Tea consumption started three days prior to menstruation and continued five consecutive days. Pain severity was recorded daily using the Visual Analogue Scale (VAS), while secondary symptoms such as bloating, fatigue, and mood swings were documented using a standardized questionnaire. The treatment group showed a significant decrease in mean VAS pain score (from 7.4 +/- 0.5 to 5.6 +/-0.7; p <0.01). Moreover secondary symptoms improved substantially, with reduction of 70% in bloating, 65% in fatigue and 60% in mood swings. The absence of adverse effects and high treatment compliance confirm the polyherbal tea as a safe and effective intervention for primary dysmenorrhea.

Keywords: Primary Dysmenorrhea, Polyherbal Tea, Menstrual Health

AYURVEDIC COSMETOLOGY APPROACHES TO PREMATURE HAIR GREYING (AKĀLAPĀLITYA): A LITERATURE REVIEW OF HERBAL AND LIFESTYLE INTERVENTIONS

¹Perera G.P.A.R.I., ²Perera H.A.R.P.

¹*The Faculty of Indigenous Medicine, University of Colombo,*

²*Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka*

ABSTRACT

Premature canities, or premature hair greying (PHG) (Akalapālitya in Ayurveda), is a cosmetological and psychosocial problem that occurs before the normal senile stage. Commonly used treatment options include the use of chemical dyes, which give transient results and could have harmful side effects. Ayurveda, by the concept of Akalapālitya, has its own natural methods of cosmetology by way of herbal formulations, rejuvenative measures, and lifestyle modifications. The aim of this study is to evaluate Ayurvedic cosmetology approaches to PHG by synthesizing evidence from different peer-reviewed journals using PubMed, Scopus, and Google Scholar (2010–2025). The collected data were analyzed according to diet & Rasāyana, lifestyle interventions, herbal interventions, and clinical & pharmacological evidence. PHG is a pitta-dosha-dominated disorder, according to Ayurveda, and its primary causes include heredity, Ahitha Aahara (poor food), disregard for Dinacharya (daily routine) and Ritucharya (seasonal routine), living in a polluted environment, and dealing with a stressful work culture. Herbal agents in the form of Bhringaraja (*Eclipta alba*), Yaṣṭimadhu (*Glycyrrhiza glabra*), etc., and polyherbal oils, for example, Nilibhringadi Taila, have been found to possess antioxidant, hair melanogenic-stimulating, and hair follicle proliferative properties. Rasāyana formulations promote systemic rejuvenation, whereas lifestyle practices such as dinacharya, nasya karma, yoga, and Sadvritta, combined with stress management, support prevention. Proof points show that Ayurveda cosmetology gives safe and multi-pronged ways for PHG control through herbal formulations, lifestyle interventions, and rejuvenative therapies. Yet, strong multicenter randomized tests and set formulas are needed to check clinical effect and help blend with modern cosmetology. Ayurveda's holistic paradigm offers a sustainable, natural alternative for managing premature hair graying.

Keywords: Premature hair greying, Akalapālitya, Ayurveda cosmetology

A SYSTEMATIC REVIEW ON MEDICAL EFFECT OF SHATHAPUSHPA (ANETHUM GRAVEOLENS) IN GYNECOLOGICAL DISORDERS

L.G.S.L. Nikethani, H.A.R.P. Perera

Faculty of Indigenous Medicine,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Shathapushpa (*Anethum graveolens*) commonly known as dill is an herbaceous plant with significant historical and medicinal use across various traditional medicine systems including Ayurveda. The aim of this study is to systematically review the pharmacological, morphological, phytochemical and medicinal uses of Shathapushpa on gynecological disorders validate the traditional claims regarding its efficacy and explore its role in modern gynecological practice. Research problem is in which disease condition shathapushpa can be use, which form shathapushpa can be use, with what kind of Anupana can be use and what is the effect. A systematic review was done using the PRISMA model to ensure a comprehensive and unbiased assessment of the available. A literature search from 2000 to 2023 was identified through database including PubMed, Science Direct, Google Scholar, Research Gate. The review is categorized findings based on phytochemical, pharmacological and medicinal aspects of Shathapushpa. Phytochemical analysis indicate the presence of key compounds like tannin, anethol, β -sitosterol, flavonoid, phenolic acid, essential oil which contribute to its therapeutic effect. Key outcomes are including its effectiveness in managing specific gynecological conditions such as oligomenorrhea dysmenorrhea, PCOS, anovulation, infertility, post-menopausal problem, Labor difficulties, postpartum conditions. The review also evaluates the most effective methods of administration and potential benefits in reducing treatment costs and improving patient outcomes.

Keywords:

Shathapushpa, *Anethum graveolens*, Dill, Gynecological disorders

ROLE OF PUNARNAWADI GANDUSHA (MOUTHWASH) IN THE MANAGEMENT OF JIHVA PAKA (GLOSSITIS): A REVIEW STUDY

Tharukshi K.A.S, Perera H.A.R.P

Faculty of Indigenous Medicine,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Jihva Paka is a condition where the tongue becomes inflamed, ulcerated, or painful, often due to: Agnimandya (poor digestion), Pitta dosha aggravation (inflammation), Ama accumulation (toxins), Consumption of excessively hot, spicy, or acidic foods. This is consistent with the modern disease glossitis. Glossitis is estimated to affect approximately 1% to 3% of the global population at any given time. Glossitis may lead to pain, swelling, color changes, thorny sensations, rotting and functional impairments of the tongue. As a result, Gandusha is described as one of the key therapies in the Ayurvedic system of medicine for maintaining oral hygiene and treating oral disorders. Punarnawadi gandusha is a Sri Lankan traditional medicine preparation made up of four equal parts of herbs: Boerhavia diffusa (Punarnawa), Zingiber officinale (shunti), Piper nigrum (Maricha), and Terminalia chebula (Haritaki). It includes powerful antioxidants and antimicrobial compounds as well as other bioactive substances such as flavonoids, phenolic compounds, alkaloids, amino acids, fatty acids, and different carbohydrates. The purpose of this review was to explore the traditional and modern evidence regarding the use of Punarnawadi gandusha and finding a drug for multi-drug resistance bacteria for Jihva Paka. These herbs were well-documented in classical texts for their antimicrobial, anti-inflammatory, wound healing, and cleansing properties, and modern studies further validate their pharmacological activities. To evaluate their potential synergistic role in tongue disease management, a systematic literature review was conducted by screening classical Ayurvedic texts, traditional medical books, pharmacological databases, and modern scientific publications. As a result, it contributed to the maintenance and promotion of tongue hygiene, reducing tongue coating, preventing microbial colonization, promoting healing of ulcers, relief of pain and reduction of rotting of tongue. An attempt is made in this regard to discuss the role of Punarnawadi Gandusha in Jihva Paka.

Keywords: Punarnawadi gandusha, Jihva Paka, Glossitis, Multi drug resistance bacteria

A RANDOMIZED CONTROLLED TRIAL PROTOCOL TO EVALUATE THE EFFICACY OF A TRADITIONAL RECIPE IN THE MANAGEMENT OF HYPERLIPIDEMIA

¹Dr. T.D.H.R. Madushani, ²Dr. H.A.R.P. Perera, ³Dr. J.A.N. Sandamali

¹Pasyale Ayurveda Osu pvt limited, ^{2,3}Department of Kaumarabrutya and Stree Roga, Gampaha Wickramarachchi University of Indigenous Medicine, Sri Lanka

ABSTRACT

Hyperlipidemia which is a burning issue in healthcare sector since it gives rise to serious medical conditions including cardiovascular diseases. The randomized controlled open label trial is going to perform for 20 patients in Gampaha district who are in borderline high cholesterol levels in their lipid profile to evaluate the safety of a traditional recipe. Age if 30-65 years are going to be selected and patients who are being treated for coronary heart disease and high cholesterol level patients are excluded. After 12 weeks of oral administration of the medicine twice daily, improvement of the lipid profile will be assessed. The findings of this trial will provide important information regarding the traditional recipe in the management of hyperlipidemia.

Keywords: Hyperlipidemia, Cholesterol, Traditional recipe

BACKGROUND

Elevated lipids including cholesterol, triglycerides and fat more than normal range in blood is called as hyperlipidemia which is a most prevalent disease in worldwide accounts more than 39% of the world population and more prone to have female (40%) than male (37%) cause serious medical conditions like atherosclerosis, thrombosis, coronary heart diseases. Due to lack of awareness,

regular checkups most of suffering got worsen the condition. Since this disease life threatening it is needed to have effective affordable and available medication. This study is based on a traditional recipe which fulfill these three requirements and effectively act on hyperlipidemia among patients.

Objectives

The main objective of this study is to evaluate the efficacy of a traditional recipe in the management of hyperlipidemia and our aim is to introduce a medicine with safety and efficacy as well as to increase the quality of life of individuals.

Study Design

Randomized controlled open table trial is going to perform in a group of 20 patients in Gampaha district who are trained in the borderline high cholesterol levels in their lipid profiles. High total cholesterol patients, patients who treated for coronary artery disease and who are treated for hyperlipidemia are excluded and 30-65 years of age patients are going to be selected. Participants in the treatment group will receive prepared herbal medication one teaspoon (5ml) twice daily for 12 weeks administered orally. The preparation will be carried out according to a traditional recipe.

The primary end point will be the mean reduction and total cholesterol level

from baseline to week 12. Secondary end points will be changes of LDL cholesterol, HDL cholesterol, HDL/LDL ratio and proportion of participants achieving recommended lipid targets.

Expected Outcomes

This trial is performed to elucidate that the traditional herbal medicine which is used among Ayurveda physicians will produce a considerable reduction in serum LDL – Cholesterol and other lipid parameters. This recipe is not expected to have adverse effects as it can be used safely.

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**THERAPEUTIC POTENTIAL OF CRATEVA ADANSONII (LUNUWARANA)
BARK KALAN 12 KASHAYA IN THE MANAGEMENT OF UTERINE FIBROIDS:
AN INTEGRATIVE AYURVEDA AND BIOMEDICAL PERSPECTIVE**

D.M.B.S.M. Danigala, A.W.M.S.C. Akmeemana, H.A.R.P. Perera

*Faculty of indigenous Medicine, Gampaha Wickramarachchi University of Indigenous
Medicine, Sri Lanka*

ABSTRACT

Uterine fibroids are the most common benign tumours of the female reproductive system, particularly among women of reproductive age, and though non-malignant, they often cause significant morbidity in the form of menorrhagia, dysmenorrhea, pelvic pain, infertility, and adverse reproductive outcomes. Several risk factors such as advancing age, family history, hormonal imbalance, obesity, and lifestyle contributors have been identified in their pathogenesis. In Ayurveda, fibroids are conceptualized as Kapha–Vata predominant disorders, where Kapha is responsible for abnormal proliferative growth and Vata for pain and menstrual irregularities, with impaired Agni and obstruction of the Artava Vaha Srotas described as the central pathogenetic mechanisms. The objective of this review is to examine the therapeutic potential of *Crateva adansonii* (Lunuwarana) Bark Kalan 12 Kashaya in the management of uterine fibroids by integrating Ayurvedic concepts with contemporary biomedical findings. Methodologically, classical Ayurvedic texts were analysed for references on uterine growths and herbal management, while recent pharmacological studies and experimental data on *C. adansonii* were reviewed to identify its pharmacodynamic and pharmacological relevance. Traditionally, Pothu Kalan 12 Kashaya has been prescribed for glandular swellings and reproductive pathologies, and the herb is described as having Tikta–Madhura–Kashaya rasa, Laghu–Ruksha guna, Katu vipaka, Ushna virya, and Bhedana prabhava, enabling pacification of Kapha and Vata doshas. Modern investigations demonstrate its anti-inflammatory, antioxidant, hepatoprotective, and estrogen-modulating properties, which directly align with the mechanisms implicated in fibroid development and progression. These findings suggest a potential role for *C. adansonii* in alleviating clinical symptoms, regulating uterine pathology, and preserving fertility. In conclusion, the convergence of Ayurvedic principles with biomedical insights highlights *C. adansonii* Pothu Kalan 12 Kashaya as a promising, fertility-preserving therapeutic option, though systematic preclinical and clinical studies are essential to confirm its safety, efficacy, and long-term therapeutic potential.

Key words: *Crateva adansonii* , Uterine fibroids, Lunuwarana Bark Kalan 12 Kashaya

THE EFFICACY AND SAFETY OF PLANT-BASED INTERVENTIONS IN IMPROVING MENTAL HEALTH OUTCOMES AMONG WOMEN DURING MENOPAUSE – A SYSTEMATIC REVIEW

M.V.R.S.S. Ariyaratne, K.P.K.R. Karunagoda, R.H.S.K.de Silva

Faculty of Indigenous Medicine, University of Colombo,

Sri Lanka

ABSTRACT

Mental health significantly affects quality of life during menopause, and plant-based interventions are increasingly explored as alternatives to conventional hormonal therapies. This review aimed to evaluate the potential benefits of herbal medicines in managing menopause-related mental health issues. A systematic search of PubMed, Web of Science, and Google Scholar was conducted for studies published between 2020 and 2025 using the keywords menopause, depression, anxiety, and plant medicine. The PRISMA guideline was followed. Exclusion criteria included duplicates, insufficient data, and lack of full-text access, irrelevance, and animal studies. Of 1380 articles screened, 25 met inclusion criteria. Eighteen plant-based interventions were identified including *Crocus sativus*(Saffron), *Rosa damascena*, *Vitex agnus-castus*, *Ocimum basilicum*, *Salvia officinalis*, *Lavandula angustifolia* (Lavender oral or inhaled), *Matricaria chamomilla*(Chamomile), *Panax ginseng* (Ginseng), *Melissa officinalis*, *Nigella sativa*, and several poly-herbal formulations significantly reduce depression, anxiety, and stress or to improve quality of life. Among these, saffron extract demonstrated some of the most consistent and marked improvements in both anxiety and depression, with favorable safety outcomes. Conversely, some interventions such as *Elaeagnus angustifolia* and *Rheum ribes* showed no significant benefits, suggesting that not all botanicals confer psychological relief in menopausal women. Additional promising findings were reported for Black Cohosh, Fenugreek, Hops, Valerian, Passionflower, and Soy isoflavones, which demonstrated improvements in mood and anxiety symptoms, often with minimal or no side effects. However, further high-quality clinical trials are required to confirm efficacy and ensure safe clinical application

Keywords: Menopause, Depression, Anxiety, Plant based interventions

A COMPARATIVE LITERATURE REVIEW ON BĪJAKOṢA GRANTHI AND POLYCYSTIC OVARIAN SYNDROME (PCOS)

Priyanka S, Perera A. A. S. A. S., Perera H. A. R. P

*Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous
Medicine, Sri Lanka*

ABSTRACT

Polycystic Ovarian Syndrome (PCOS) is a prevalent endocrine-metabolic disorder, affecting approximately 10% of women globally, and characterized by polycystic ovaries, anovulatory infertility, hyperandrogenism, and associated symptoms like oligomenorrhea and hirsutism. While classical Ayurvedic texts do not explicitly name PCOS, they describe disorders with parallel symptomatology. This review investigates the correlation between the Ayurvedic concept of Bījakoṣa Granthi and the modern diagnosis of PCOS. The methodology involved a comprehensive analysis of classical Ayurvedic compendia including the Caraka Saṃhitā, Suśruta Saṃhitā, Aṣṭāṅga Hṛdaya Saṃhitā, and Kāśyapa Saṃhitā alongside a review of contemporary research articles from databases such as PubMed and Google Scholar (2000–2024). The etiopathogenesis of Bījakoṣa Granthi is rooted in the vitiation of Tridoṣa, with a predominance of Kapha-Vāta, affecting the Rasa, Rakta, Māṃsa, Meda, and Ārtava Dhātu. This is compounded by Agnimāndya, which leads to the formation of Āma and subsequent obstruction (Srotorodha) in the Rasavaha and particularly the Ārtavavaha Srotas. The clinical features of Granthi directly correspond to the numerous follicular cysts seen on ultrasound in PCOS. This aligns with the classical description of Granthi by Ācārya Suśruta, defined as a rounded, firm swelling produced when Rakta, Māṃsa, and Meda are vitiated by Tridoṣa. Furthermore, conditions like Vandhyā, Arajaskā, Naṣṭārtava, Puṣpaghni, and Jātaḥarini offer additional correlative frameworks for the diverse symptomatology of PCOS. The manifestation of Ārtava Duṣṭi and Sthaulya in Bījakoṣa Granthi corresponds directly to the oligomenorrhea and weight gain central to the PCOS phenotype. The review concludes that Bījakoṣa Granthi provides a coherent and comprehensive Ayurvedic model for understanding PCOS. This integrative perspective, which encompasses metabolic, hormonal, and reproductive dimensions, offers a foundational paradigm for developing holistic diagnostic criteria and personalized management strategies that address the root Doṣic imbalance, rather than merely suppressing symptoms.

Keywords: Bījakoṣa Granthi, Polycystic Ovarian Syndrome, Ārtavavaha Srotas

CASE REPORT: MANAGEMENT OF DYSPHAGIA WITH SIDDHA VARMAM THERAPY

¹Sritharan G, ²Piratheepkumar R, ³Vijitha P, ⁴Tharaneenthan K

¹*Herbal Health Care Center, ^{2,3,4}Department of Moolathathuvam, Faculty of Siddha Medicine, Trincomalee Campus, Eastern University, Sri Lanka*

ABSTRACT

Background: Dysphagia is the medical term for difficulty swallowing, which can be painful and, in severe cases, may even make swallowing impossible. Occasional difficulty swallowing, for instance, when eating too quickly or not chewing food well enough, is usually not a cause for concern. However, persistent or progressive dysphagia can indicate a serious underlying medical condition that requires treatment. **Case Presentation:** A 49-year-old male with a two-year history of severe dysphagia, unable to tolerate solids or liquids, was referred for esophageal replacement surgery, which is not cost effective, after endoscopy revealed gross esophageal dysfunction. Based on Siddha principles, the condition was diagnosed as Sanguthiry Varmam, attributed to trauma-induced disruption of swallowing reflexes. **Intervention:** The patient underwent Siddha Varma therapy involving sequential stimulation of specific points, Kuththy Varmam, Kondai Kolli Varmam, Kavala Varmam, and Konasanni Varmam, using graded finger pressure (Mathirai). **Result:** Remarkable improvement was reported by the second day of treatment, with further progress by the fourth day, and by 9th of August 2025 the patient experienced complete resolution of dysphagia, regaining normal swallowing function and thereby avoiding major surgery. This case highlights the therapeutic potential of Siddha Varma therapy in restoring neuromuscular and pranic balance. From a biomedical perspective, surgical correction is generally the standard management for severe esophageal dysfunction, yet this case demonstrated that non-invasive Varma stimulation achieved comparable outcomes at a minimal cost, without hospitalization, anesthesia, or surgical risks. **Conclusion:** Siddha Varma therapy may therefore serve as an effective, safe, and affordable alternative to surgery for selected cases of dysphagia, warranting further clinical studies to substantiate these findings.

Keywords: Sanguthiry Varmam, Dysphagia, Varma therapy

DEVELOPMENT AND PRELIMINARY EVALUATION OF A NOVEL HERBAL COSMETIC OIL FOR HAIR GROWTH AND HAIR FALL PREVENTION

Udayangani G.G.Y.Y., Perera H.A.R.P

Department of Kaumarabruthya & Stree Roga,

Gampaha Wickramarachchi University of Indigenous Medicine,

Sri Lanka

ABSTRACT

Hair health is a central aspect of cosmetic appearance and personal confidence, with hair fall and impaired growth ranking among the most prevalent concerns worldwide. Conventional treatments such as synthetic topical agents, supplements, and surgical interventions often provide limited efficacy and are associated with adverse side effects, which has increased the demand for natural remedies with better safety profiles. Traditional medical systems, particularly Ayurveda, have long advocated the use of herbal oils (sneha kalpana) that combine lipid bases (sneha dravya) with herbal pastes (kalka dravya) and aqueous extracts (drava dravya) to nourish the scalp and strengthen hair roots. The present study describes the development and preliminary evaluation of a novel herbal cosmetic oil formulated using classical Ayurvedic principles. The preparation included sesame, castor, and coconut oils as lipid bases; herbal juices of False Daisy, Indian Pennywort, Sessile Joyweed, Curry Leaves, Neem, and Red Onion as aqueous extracts; and powders of Fenugreek, Indian Gooseberry, and Hibiscus as herbal pastes in the ratio 1:4:16, respectively. Organoleptic evaluation, spreadability, absorption, stability, pH measurement, and dermal safety through patch testing were performed. The formulation exhibited desirable cosmetic properties, including pleasant fragrance, smooth texture, good spreadability, rapid absorption, and

stability for 30 days at room temperature without separation or rancidity. Patch testing confirmed dermal safety with no allergic reactions in volunteers, and the pH was within the ideal range for scalp application.

Keywords: Herbal cosmetic oil, Ayurveda, hair growth, hair fall prevention, sneha kalpana

INTRODUCTION

Hair health is a vital determinant of cosmetic appearance, cultural identity, and personal confidence. Across societies, healthy, lustrous hair is associated with beauty, youth, and well-being, while hair loss can negatively impact self-esteem and social interactions. Globally, hair fall and impaired growth are among the most common cosmetic concerns. The etiology of hair loss is multifactorial, encompassing genetic predispositions, nutritional deficiencies, hormonal imbalances, stress, scalp infections, and exposure to environmental pollutants. Conventional management includes synthetic topical agents such as minoxidil and finasteride, oral supplements, and clinical procedures.

This scenario has stimulated interest in safer, natural alternatives that are affordable, culturally accepted, and suitable for long-term use. Herbal medicine, particularly formulations derived from Ayurveda, has been used for centuries to promote hair growth, maintain

scalp health, and prevent premature graying. Ayurvedic pharmacology describes a class of preparations known as sneha kalpana, in which sneha dravya (lipid-based vehicles) are processed with kalka dravya (herbal paste) and drava dravya (aqueous herbal extracts or juices).

Modern scientific inquiry supports the hair-promoting potential of several botanicals. For example, *Eclipta prostrata* (False Daisy) has demonstrated stimulatory effects on hair follicle activity and pigmentation. *Centella asiatica* (Indian Pennywort) exhibits antioxidant, circulation-enhancing, and collagen-promoting properties, which may improve scalp microvasculature and follicular health. *Murraya koenigii* (Curry Leaves) and *Azadirachta indica* (Neem) contain polyphenols and essential oils with antimicrobial and follicle-nourishing effects. Additionally, *Allium cepa* (Red Onion) juice has been shown to promote regrowth in alopecia areata due to its sulfur content and antioxidant activity. Lipid vehicles also contribute to therapeutic benefits. Sesame oil (*Sesamum indicum*) is rich in linoleic acid and sesamol, providing emollient and anti-inflammatory activity. Castor oil (*Ricinus communis*) enhances scalp circulation and has high ricinoleic acid content, which supports follicular activity. Coconut oil (*Cocos nucifera*) is known for its ability to penetrate the hair shaft and reduce protein loss. When integrated with herbal actives through sneha paka (oil-processing), these carriers serve not only as solvents but also as active agents that enhance scalp conditioning.

The present study was undertaken to develop and preliminarily evaluate a novel herbal cosmetic oil based on Ayurvedic principles. The formulation utilized twelve plant-based ingredients categorized into sneha dravya, drava dravya, and kalka dravya, processed in the traditional ratio of 1:4:16.

MATERIALS AND METHODS

Materials

•Sneha dravya (lipid bases): Sesame oil (*Sesamum indicum*), Castor oil (*Ricinus communis* L.), Coconut oil (*Cocos nucifera* L.).

•Drava dravya (herbal liquid extracts): False Daisy (*Eclipta prostrata*), Indian Pennywort (*Centella asiatica*), Sessile Joyweed (*Alternanthera sessilis*), Curry Leaves (*Murraya koenigii*), Neem (*Azadirachta indica*), Small Red Onion (*Allium cepa*).

•Kalka dravya (herbal pastes): Fenugreek (*Trigonella foenum-graecum*), Indian Gooseberry (*Phyllanthus emblica*), Chinese Hibiscus (*Hibiscus rosa-sinensis* L.).

All herbs were authenticated, and fresh plant materials were collected either from the local environment or markets. Indian Gooseberry was used in dried form. Oils were obtained from standard local suppliers.

Formulation Procedure

1. Preparation of Kalka: Dried Hibiscus flowers, Fenugreek seeds, and dried Indian Gooseberry fruits were powdered into a coarse consistency. These were mixed with a sufficient quantity of water to form the kalka.

2. Preparation of Drava: Fresh plant materials (False Daisy, Pennywort, Sessile Joyweed, Curry Leaves, Neem leaves, and Red Onion bulbs) were chopped, crushed, and squeezed to obtain swarasa (herbal juices). Minimal water was added during processing to aid extraction.

3. Sneha Paka Process: The measured oils (sesame, castor, coconut) were heated in a stainless- steel vessel until nishphena avastha (foam-free stage, indicating removal of moisture). The prepared kalka and drava were gradually incorporated into the heated oils and processed over a regulated flame until madhyama paka avastha (intermediate stage with appropriate consistency and absence of frothing).

4. Storage: The final product was filtered and stored in airtight glass containers at room temperature.

Preliminary Evaluation

- Organoleptic properties: Color, odor, and texture were examined visually and subjectively.

- Spreadability and absorption: The oil was applied on a small area of skin and observed for spread and absorption time.

- Stability test: Samples were stored at room temperature for 30 days and examined periodically for phase separation, odor change, or fungal growth.

- Dermal safety: Patch testing was performed on five healthy volunteers (48–72 hours). Participants with known allergies to onion, neem, or related herbs were excluded.

- pH determination: Measured using a calibrated pH meter.

RESULTS

The herbal oil was prepared successfully using the classical sneha paka method.

- Organoleptic evaluation: The oil exhibited a pleasant, slightly herbal fragrance, a golden-brown hue, and a smooth, non-greasy texture.

- Spreadability and absorption: The formulation spread uniformly and absorbed quickly into the scalp without stickiness.

- Stability assessment: No phase separation, rancidity, or change in odor was noted over 30 days at ambient conditions.

- Dermal safety: None of the volunteers exhibited erythema, itching, or allergic reactions during patch testing.

- pH value: The pH was within the mildly acidic range compatible with scalp physiology.

DISCUSSION

The successful preparation and preliminary evaluation of this herbal oil highlight the potential of traditional Ayurvedic formulations in addressing contemporary hair care challenges. The choice of ingredients ensured a multi-dimensional approach:

- Sneha dravya: Sesame oil provided a nourishing base rich in antioxidants and essential fatty acids that penetrate the scalp and reduce inflammation. Castor oil improved circulation, supporting follicular metabolism, while coconut oil strengthened the shaft and minimized protein loss.

- Drava dravya: These aqueous extracts contributed essential phytochemicals. *Eclipta prostrata* supplied flavonoids and coumestans reputed for hair growth. *Centella asiatica* enriched the formulation with triterpenoids and saponins that stimulate fibroblast activity and vascularization. Sessile joyweed contributed antioxidant phenolics that enhance scalp microcirculation. Curry leaves, with carbazole alkaloids, strengthened roots and delayed hair thinning. Neem's azadirachtin and nimbidin imparted antimicrobial and anti-inflammatory actions, preventing infections that compromise follicles. Onion juice added sulfur compounds that improved keratin synthesis and follicle nutrition.

- Kalka dravya: Fenugreek seeds delivered mucilage, proteins, and nicotinic acid that support follicle density. Indian Gooseberry supplied vitamin C and tannins with strong antioxidant action against oxidative stress-induced follicle damage. Hibiscus flowers contained anthocyanins and mucilage that condition hair and enhance follicle growth.

The synergistic action of these components is enhanced by the sneha paka method, which ensures the stable integration of hydrophilic and lipophilic bioactives into a lipid base. This method preserves heat-stable phytochemicals and facilitates deep delivery into scalp tissue. The preliminary findings confirm that the formulation is cosmetically appealing, dermally safe, and stable under short-term

storage. These attributes are critical for consumer acceptability and for further clinical development. While the current evaluation is limited to small-scale preparation and basic safety assessment, it establishes the groundwork for more rigorous studies. Future research should include:

1. Phytochemical profiling using chromatographic and spectroscopic techniques to confirm the presence and concentration of bioactives.
2. In vitro studies on hair follicle dermal papilla cells to evaluate proliferative and anti-apoptotic effects.
3. Controlled clinical trials assessing efficacy in subjects with hair fall, dandruff, or alopecia, with standardized outcome measures such as hair density, thickness, and growth rate.
4. Shelf-life analysis including microbial load testing and accelerated stability studies to determine long-term product viability.

CONCLUSION

A novel herbal cosmetic oil was successfully formulated using the Ayurvedic sneha paka method, integrating twelve botanicals with known hair care properties. Preliminary evaluations confirmed that the oil is safe, stable, cosmetically acceptable, and compatible with scalp physiology. This research supports the hypothesis that combining sneha dravya, drava dravya, and kalka dravya produces a synergistic formulation beneficial for hair growth and hair fall prevention. Future clinical and pharmacological studies are warranted to validate efficacy and enable potential commercialization of this innovative natural hair care product.

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PARIS MULTIDISCIPLINARY PAPERS

ENHANCING CORPORATE TRANSPARENCY THROUGH SUSTAINABILITY REPORTING: INSIGHTS FROM EMERGING MARKETS

Faezeh Aghajanigarkorodi

Universita di Siena,

Italy

ABSTRACT

The growing demand for corporate accountability has made sustainability reporting a vital tool for organizations worldwide. This study explores how the extent of sustainability disclosure affects financial transparency in emerging markets. Employing panel data from publicly listed firms between 2018 and 2023, the analysis applies regression techniques to examine the link between comprehensive reporting practices and market trust. Findings indicate that firms with detailed sustainability disclosures experience increased investor confidence and reduced information asymmetry. The study underscores the role of transparent reporting in improving both corporate reputation and governance. Practical implications are highlighted for auditors, regulators, and corporate managers aiming to align reporting practices with international sustainability standards.

Keywords

Sustainability Reporting, Financial Transparency, Corporate Governance

UNIVERSITY DRUMS: CASE STUDY OF A MUSIC COURSE SUPPORTING THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Andrew Laghos

Cyprus University of Technology

Cyprus

ABSTRACT

The aim of this research was to examine the ways a university-level drumming course aligns with and supports the United Nations Sustainable Development Goals (SDGs), highlighting its interdisciplinary significance and value in higher education. Methods included curriculum analysis and design, pedagogical design and reflective practice, observational insights, and student feedback. The results show that the course strongly supports SDG 3 (Good Health and Well-being) by fostering physical coordination and motor skills, reducing stress, enhancing mood through social bonding in group sessions, and promoting mental wellness by providing a creative outlet that encourages mindfulness and emotional expression. Active participation in drumming has also been observed to improve concentration and alleviate symptoms related to anxiety and depression. Additionally, the course connects with SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), and SDG 11 (Sustainable Cities and Communities). Other SDGs such as SDG 12 (Responsible Consumption and Production) and SDG 16 (Peace, Justice, and Strong Institutions) are also supported. These findings highlight the value of embedding SDG principles within university curricula to advance student development. This research underscores the importance of investing in and retaining such university-level music courses as evidenced by this course's active contribution to global sustainability agendas.

Keywords: University, Drums, Sustainable Development Goals (SDGs)

MULTILINGUAL INTERTEXTUALITY AND IDENTITY NEGOTIATION IN LATIN BIOGRAPHY ACROSS THE ROMAN EMPIRE

Rocco Davide Vacca

'G. d'Annunzio' University of Chieti-Pescara,

Italy

ABSTRACT

This paper investigates the role of multilingual intertextuality in Latin biographical writing as a mode of creative communication within the linguistically diverse context of the Roman Empire. Traditionally approached as monolingual texts, Latin biographies are here reconsidered as strategically layered works that incorporate allusions, lexical borrowings, and narrative techniques from vernacular languages such as Greek, Punic, and Gaulish. These multilingual features engaged a polyglot readership and fostered cross-cultural resonance across imperial boundaries. Through close analysis of selected imperial biographies (e.g. Suetonius' *Vita Divi Augusti*, *Historia Augusta's Vita Hadriani*), alongside underexplored provincial vitae (e.g. the *Vita Abercii*, the *Passio Sancti Perpetuae et Felicitatis*), the study reveals a complex interplay of linguistic and cultural references that exceed Latin literary norms. This multilingual layering operated as a conscious rhetorical strategy to negotiate identity, authority, and belonging in an increasingly globalised empire. By combining insights from comparative literature, sociolinguistics, and narratology, the paper argues that Latin biographers were early agents of creative intercultural communication, employing language as a medium to construct inclusive narratives. In doing so, they both projected imperial ideals and acknowledged regional plurality. This perspective repositions Latin biography not as a purely Roman genre, but as a dynamic literary form embedded in the cultural negotiations of a multilingual empire.

Keywords: Multilingual intertextuality, Latin biography, Cultural identity

ELECTIONS DURING WARTIME: DEMOCRATIC PARADOXES AND THE CASE OF UKRAINE

Roman Kyslenko

Ukraine

ABSTRACT

This paper examines the paradox of elections during wartime, focusing on Ukraine as a contemporary case study. Under normal democratic conditions, postponing elections is considered a deviation from constitutional order and a threat to political legitimacy. Yet, in times of full-scale war, the suspension of elections may itself become a democratic act — one that safeguards equality of participation, the right to vote, and the fairness of competition. The analysis employs a comparative approach, drawing on historical and contemporary examples: the United States during the Civil War, the United Kingdom in World War II, the global wave of election postponements during the COVID-19 pandemic, and recent practices in conflict-affected states in Africa and the Middle East. These cases highlight both the risks and the justifications of postponement, as well as their long-term impact on democratic resilience. Ukraine provides a unique lens for studying this dilemma. While a broad parliamentary consensus currently supports postponement until martial law is lifted, the debate about sequencing future elections — presidential, parliamentary, and local — raises critical questions about legitimacy, public trust, and political competition. The findings suggest that under exceptional conditions, postponement can be consistent with democracy if guided by constitutional safeguards, international law, and Council of Europe standards. However, postponement without clear criteria risks undermining democratic continuity and fostering authoritarian entrenchment. The paper concludes by offering a framework for distinguishing between necessary postponement and abuse, and for designing mechanisms that protect both national security and democratic legitimacy.

Keywords: Wartime elections, legitimacy, postponement

CULTURAL CIRCULARITY: UNSEEN MODELS OF FASHION LONGEVITY IN INDIAN HOUSEHOLDS, AN INSPIRATION TO GLOBAL FASHION SYSTEMS

Shalvi Ahirwar, Harichand P. U

NIFT Bhopal,

India

ABSTRACT

The fashion industry's transition towards circularity has largely focused on technological innovations and large-scale recycling systems. However, the cultural and emotional dimensions of garment longevity remain underexplored. This study examines Cultural Circularity—the often-overlooked, enduring practices of fashion longevity embedded within Indian households. Traditions such as repairing, altering, repurposing, and donating garments have enabled clothing to remain in active use for generations. The research addresses two key questions: (1) How does emotional durability in Indian households foster sustainable consumption patterns? and (2) How can these practices inform and inspire global fashion systems to adopt resilient circular models? Employing qualitative interviews, ethnographic observations, and an extensive literature review, the study reveals that emotional connections to clothing—rooted in memory, identity, and heritage—play a pivotal role in discouraging wasteful consumption and promoting care-driven behaviors. Findings suggest that these cultural practices serve as organic sustainability mechanisms, effectively reducing textile waste without dependence on industrial-scale interventions. Furthermore, they offer adaptable frameworks for global application, where emotional attachment can complement material recovery efforts to achieve genuinely sustainable consumption patterns. By reframing everyday clothing care traditions as strategic sustainability assets, this paper positions cultural circularity as a vital and transferable component in reimagining global fashion systems—bridging indigenous wisdom with international sustainability objectives.

COLORS OF THE ZELLIGES AT THE PALACE OF EL MESHOUAR (TLEMCEEN, ALGERIA): HARMONIES, AESTHETICS, AND CHROMATIC EFFECTS

Dr. Meriem Benkhedda

Department of Architecture,

University of Science and Technologies of Oran,

Algeria

ABSTRACT

This paper presents a chromatic analysis and visual effects of the polychrome zelliges of the Zyianid Palace of El Meshouar (Tlemcen, Algeria). It highlights the color compositions, harmonies, and atmospheres they create within the architectural space of the palace. The study is based on the contrasts theorized by Itten (1981) and Barnett's (2008) aesthetic approach inspired by Van Gogh. It examines color associations, oppositions, and vibrations, as well as their impact on spatial and emotional perception. The methodology combines in situ surveys, photographic analysis, and experimental investigation with visitors, thus comparing the expected chromatic effects with the observed feelings. The results highlight a repertoire of atmospheres and visual illusions (volume, depth, movement) where color, as a carrier of aesthetic and symbolic value, plays a structuring role in the staging of architectural heritage. The results reveal that color, beyond its decorative value, is a structuring element of the site's visual and sensorial identity, playing a full part in the transmission and contemporary staging of architectural heritage.

Keywords: Polychrome zellige, El Meshouar palace, atmospheres, harmonies

THE ADOPTION OF SUSTAINABLE TEXTILES & SMART APPAREL TECHNOLOGY FOR THE SOUTH AFRICAN HEALTHCARE SECTOR

Winiswa Mavutha

*Durban University of Technology, Department of Textile Science & Apparel Technology,
Faculty of Applied Sciences, South Africa*

ABSTRACT

The development of sustainable textiles and smart apparel technology represents a crucial advancement for the healthcare sector in South Africa, providing innovative solutions to improve patient monitoring and overall healthcare delivery. This research explores the integration of sustainable textile fibers and intelligent apparel technologies, comprising embedded sensors and data analytics, that enable real-time health monitoring to improve the overall treatment of patients. Smart textiles have already begun to revolutionize patient care in the global health care systems—enabling continuous monitoring of patient’s heart rate, temperature, and blood pressure while digitally transferring medication to patients. This improves patient treatment and reduces hospital readmissions. South Africa's healthcare sector faces unique challenges, including resource constraints and a high burden of disease. By using sustainable textiles and smart apparel technology, South African manufacturers can address these challenges while promoting environmental sustainability through waste reduction and decreased reliance on harmful chemicals that are typically utilized in traditional textile manufacturing. The study aims to highlight the significance of integrating sustainable practices into the textile supply chain, highlighting the potential for job creation and economic expansion in a sector critical to the national economy. Additionally, it will examine the importance of collaborative initiatives among stakeholders—such as government entities, healthcare providers, including textile and apparel manufacturers, which promotes an environment that fosters innovation in sustainable smart textiles and apparel technology. By utilizing local resources and skills, South Africa can establish itself as a pioneer in the global South region for the creation of environmentally sustainable healthcare solutions that correspond with global sustainability trends and the sustainable development goals. This study will comprise a mixed method approach comprising of surveys, focus group interviews and case healthcare professionals, patients, and textile manufacturers to gather in-depth insights into their experiences, expectations, and concerns. The study emphasizes that using sustainable smart textiles in healthcare improves patient care through enhanced monitoring capabilities while fostering a circular economy using biodegradable fibers and minimizing textile waste. The global healthcare sector is increasingly acknowledging the advantages of smart textiles for personalized medicine, and South Africa can leverage this technology to enhance its healthcare services while tackling urgent environmental issues. In conclusion, the adoption of sustainable smart textiles in the South African healthcare sector provides multiple advantages that enhance patient outcomes via improved monitoring, increased comfort, reduced hospital visits, customised medical solutions, environmental sustainability, and integration with existing healthcare technologies. These innovations can improve individual patient health and improve the overall efficiency and efficacy of the healthcare system in South Africa.

Keywords: Sustainable textiles, smart apparel technology, healthcare innovation, South Africa

ECONOMIC LAW BETWEEN REGULATION AND COMPLIANCE RULES: A COMPARATIVE LEGAL APPROACH

Omar Hsiba

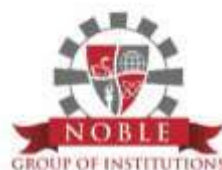
*Economic and Social Sciences,
Mohammed V University in Rabat,
Morocco*

ABSTRACT

The growing complexity of global markets has transformed the role of economic law into a dynamic framework where traditional regulatory mechanisms increasingly intersect with compliance obligations. This paper examines the enterprise as both a subject and an actor within this dual framework, focusing on the tension and complementarity between public regulation and private compliance. The study argues that regulation and compliance are not competing paradigms but mutually reinforcing mechanisms designed to safeguard economic order, enhance market transparency, and promote responsible corporate governance. Through a comparative legal analysis, with particular reference to European Union standards and their influence on emerging economies such as Morocco, the research highlights how compliance has evolved from a voluntary practice to a quasi-normative obligation. The paper further explores whether compliance can be considered an extension of regulation, or rather a distinct legal tool that reshapes the boundaries of corporate responsibility. By addressing both theoretical foundations and practical implications, the presentation seeks to contribute to the academic debate on how enterprises reconcile their economic freedom with their legal and ethical duties under the current global legal order. This research is part of my doctoral thesis at Mohammed V University of Rabat and aims to foster dialogue on the future of economic regulation and compliance in both developed and developing jurisdictions.

Keywords: Economic Law, Regulation, Compliance, Corporate Governance, Comparative Law

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