25. Treasure of Chemistry from Ancient India should Amalgamate Traditional & Modern Science in New Education Policy

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ABSTRACT

India has a rich heritage of being one of the world's foremost suppliers of natural dyes in ancient times. Literature review imparts utilization of mineral pigments or plant extracts, certain fungi or insects. Protection and preservation of traditional knowledge reflected in Ayurveda have been a matter of concern in India. Report by the Task Force carried out on international patent data bases shows that more than thousand patent references on medicinal plants belonging to traditional knowledge system of Indian Origin. Ancient Sanskrit literature was deep routed with medicinal importance of plants.This data base is the strong evidence for medicament of disease. It promotes the course structure based on these points database banks where Sanskrit and Sciences will work together, evident based researchwith regard to all sciences .Standardization of medicines and patent filling of the content is need to inculcate in syllabus of new education in India.

***Keywords**: Ayurveda, Dyes, Medicinal plant, Sanskrit, Science*

Introduction:

Ayurveda is renowned for its medicinalknowledge since ancient time. Herbs have a great medicinal nature & are a natural form of life. The term “Natural Dye” refers to dyes obtained from natural resources such as plants, insects and mineral Substrates.

Utilization of Natural dye reflected from the Vedic Period. In this period people may knew different methods of dyeing the clothes. Vedic Literature mentions several dye-stuffs and cloths of different colours, but they do not shed any light on the technique of dyeing.

The Brhidaranyak Upanisad suggests that clothes used to be dyed with various colours such as yellow scarlet and red.

The compilers of the Grhya sutras were also acquainted with the art of dying. It states the details of the garment at the time of upanayana. So, it appears that vegetable and stone dyes have been widely used from the very early times. While explaining the Upanayan Samskar, Ashvalayana states that Brahmana should wear reddish yellow (**काषायं**), a kshatriya's garment should be manjistha (**माञ्जिष्ठं** dyed with madder), and a vaisya should put on yellow garment (**हारिद्रं** charindra) at the time of upanayana.

The famous Sanskrit Grammarian Panini also indicates about the colours known to the then people. It is reflected in his famous book Ashtadhyayi. They were raga, red, black, laksha also called jalu, madder (majistha) and orpiment (rochana). It is confirmed that by the time of Panini people were well familiar with the knowledge of colours.

Following Sūtrasfrom Astadhyayi of Panini clearly stated the information about colours

रञ्जेश्च,रक्ते रक्त- लाक्षादिना रक्ते यो लोहितशब्दः तस्मात् कन्प्रत्ययो भवति। लोहितकः कम्बलः। लोहितकःपटः लोहितिका शाटी -सिद्धान्तकौमुदी),लोहितान्मणौलोहित-red,लाक्षा-रोचना-शकल-कर्दमाट्टक्,लाक्षिकः रौचनिकः शाकलिकः कार्दमिकः

नील्या अन् नील्या रक्तम्- नीलम्- वार्तिक

पीतात् कन्- पातकम्

हरिद्रामहारजनाभ्याम् अञ्

हारिद्रम् माहारजनम्

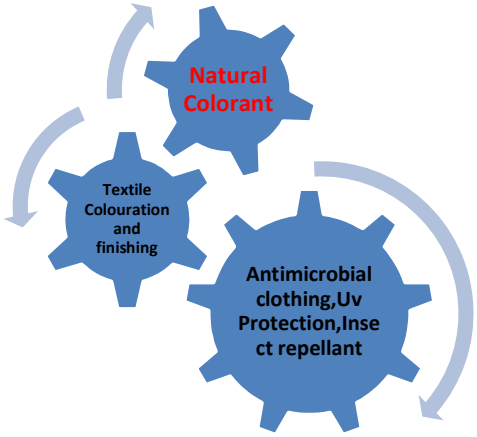
Rasarnava, a famous text known as repository of ancient chemistry, throws light on various types of Rasas. Here the glimpses related to dying technique have been stated in brief. Interestingly, in the second chapter it has mentioned that one who knows the technique of Colour should be known as Guru. Here, one gets the reference of 'Ranjana,Varnotkarsa etc.' though the direct reference of dying on clothes is not stated over here but changes in seed colours and reactions of chemicals in the form of colours are well described (Rasarnava Patala 8).

With the influx of synthetic dye substitutes for natural dyes in 18th & 19th century, the natural dye has ceased in most partof the country. This is due to the fact that synthetic dyes were cheaper and the dyeing process was simpler. Looking at the interest in global market for 100% Natural Textile material in which various natural dyesare used to impart color.Color has always played animportant role in the formation of different cultures ofhuman being all over the world. In the past, painters had used natural dyes extracted from plants, insects, and molluscs and minerals for their paintings. Incorporation of natural dye in cosmetic industry (Henna, Catechu), pharmaceutical industry (Saffron, Rhubarb) andin food industry (Annatto, Curcumin and Cochineal).

In the Ancient Stone Age, descriptions imparts thatutilization of various powders made up of coloredminerals, and applied to their hair and body parts to confermagic powers while hunting as well as occasional dressings. Ancient North African dyers were used bio-colorants derived from madder (Rubiatinctoria), cochineal (Dactylopius coccus) and kermes (Kermes vermilio) assources for dyeing and inmedieval miniature paintings as well as in cosmetics. The Egyptians were conscious as they excelled in weaving for many inscriptions extol the garments of thegods and the bandages for the dead, principally dyed witharchil, a purple color derived from certain marine algae found on rocks in the Mediterranean Sea; alkanet, a redcolor prepared from the root of Alkannatinctoria, Rubiatinctorum, which generates red colored materials, wood (Isatistinctoria), a blue color obtained by a process offermentation from the leaves, and indigo from the leaves of the Indigofera species. Natural originated bio-colorants have been discovered through the ingenuity and persistence of our ancestors, forcenturies and may be found veiled in such diverse places asthe plant roots (i.e. Rubiatinctorum), rhizomes (Rheumemodi, Curcuma longa), insects (Laciferlacca, Kermes) and the secretions of sea snails. However, in Mediterraneancivilization, the most valuable colors were indigo for theblues, madder for the reds and 6, 60- dibromo indigo for purple. The nails of Egyptian Mummies were dyed with the leaves of henna, Law soniainermis. Chemical tests of red fabrics found in the tomb of King Tutan khamen in Egypt show the presence of alizarin, apigment extracted from madder. Kermes (Coccus ilicis/Kermes vermillio) which flourished on evergreen Oak (Quercuscoccifera) in Spain, Portugal and Morocco is identified in the Book of Exodus in the Bible, where references are made to scarlet colored linen. Sappan wood was exported from India to China as early as 900 BC. The relics from excavation at Mohenjo-Daro and Harappa (Indus Valley Civilization), Ajanta Caves Paintingand Mughal dyeing, printing and painting, show the use of natural dyes such as Madder, Indigo and Henna. The most famous and highly

prized color through theages was Tyrian purple, noted in the Bible, a dye obtained from the hypo branchial glands of several marine gastro pods molluscs of the genera Murex, Bolinus, Purpura, Plicopurpura and Thias and it is probably the most expensive dye in the history of mankind. As now public's awareness for eco-preservation, eco-safety and health concerns, environment benign and non-toxic sustainability in bio resourced colorants, have created arevolution in textile research and development.

As a result, eco-friendly non-toxic naturally occurring bio colorantshave gaining re-emergence as a subsequent alternative through green chemistry approaches with wide spread applicability to textile coloration and other biomedical aspects. We would like to propose here to incorporate this knowledge to have skill based courses.



Approximately 90% of Ayurveda preparations are plant based. Ayurveda plants have a stronger action on the body than eitherfood or spices. Polyhedral combinations have also proven lastingly effective than single herbs. The supporting herbs will each have different actions, acting as catalysts to help proper absorption, transportation, and to reduce toxicity. If an ideal combination is delivered, then the result can be excellent. The Sanskrit classics *Atharvaveda*, *Charak Samhita* and *Sushrut Samhita* together describe more than 700 medicinal herbs, cataloguing everything from their taste, appearance and digestive effects to safety, efficacy, dosage and benefits. The traditional Ayurvedic text Sarangdhar Samhita, which datesfrom 1300 AD, highlights the concept of poly herbal is minth is ancient medical system. Most Ayurveda formulations are polyherbal. While the active phyto chemical constituents of individual plants are well established, they are usually present only in minute amounts and are, thus, insufficient toachieve the desired therapeutic effects. Ayurveda Pharmacopoeia of India sets standards of drugs/ingredients mentioned in different formulations of Ayurveda Formulary of India. There are also 56 referral texts described under the Drugs and Cosmetics Act.

Future Prospective IKS in New education and Conclusion:

Thus we see that the art of dyeing was as old as human civilization. From historical records, it is learnt that natural colorants were available to people from ancient times. The early Vedic Aryans did not practice so much techniques of dyeing because they were a pastoral and migratory people. In the present scenario, the growing concerns among the communities globally against the use of synthetic dyes due to their carcinogenic. More experimental

implementations should be focused to adopt novel technologies for making natural colorants as a compatible as well as eco-safe alternative with synthetic colorants in different spheres of our life to make a greener world.

We here like to propose the greener route of utilization of skill enhanced courses for preparation of dyes and its bio medical approach to textile industry.

Secondly we like to focus on point of official data collection medicinal plants belonging to traditional knowledge system of Indian Origin, Courses based on patenting information of IKs Ayurveda, as Ancient Sanskrit literature was deep routed with medicinal importance of plants.The Ayurvedic database in classical textscan be used for bioprospecting and new drugdiscovery. India can benefit enormously if it can builda golden triangle between traditional medicine, modern medicine and modern science,"

This is possible, if we have central data bank, standardization of active ingredients, and biological study data then the task of patent filling will be easier. These things promote the course structure based on these points database banks where Sanskrit and Sciences will work together, evident based research with regard to all sciences, Standardization of medicines and patent filling of the content is need to inculcate in syllabus of new education in India

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उप॒ प्र जिन्वन्नु॒शती॒रु॒शन्तं॑ पति॑ं न नित्यं॑ जनयः सनी॒ळाः ।

स्वसा॑रः॒ श्याव्ी॒मरु॑षीमजु॒ष्रञ्चित्र॑मुच्छन्तीमु॒षस॑ं न गावः॥। (ऋ.१.७१.१)

(ऋग्वेदसंहिता सायणाचार्यविरचितभाष्यसमेता VOL1, Mandal 1, Vadic Samshodhan Mandal, 1933, Page 463) तत्र दृष्टान्तः ।"**श्यावीं श्यावववर्णां रात्रिसंबन्धात् कृष्णां** ततः "**उच्छन्तीं सूर्यकिरणसंबन्धात् तमो वर्जयन्तीं अत एव शुभ्ररूपयुक्ताम् यद्वा आरोचमानां अरुषीं**""**उषसं**"न उषोदेवतां "गावः रश्मयो यथा सेवन्ते तद्वत् । यथा रश्मय उषसा नित्यसंबद्धा एवं सर्वेषु यज्ञेष्वग्निपरिचरणेनाङ्गुलयो नित्यसंबद्धा इति तात्पर्यार्थः ॥

यथा माहारजनं वासः, यथा पाण्ड्वाविकम्, यथेन्द्रगोपः। (बृहदारण्यकोपनिषद् २.३.६)

माहारजनम् –dyed with turmeric पाण्डुआविक-grey sheep's wool इन्द्रगोपः (deep red) insect called Indragopa (The Bṛhadaraṇykopaniṣad, Ramakrishana Math, Chennai, India1951)

यदि वासंसि वसीरन् रक्तानि वसीरन् काषायं ब्राह्मणो माञ्जिष्ठं क्षत्रियो हारिद्रं वैश्यः।(आश्वलायनगृह्यसूत्र १.१९.९)(Aśvalāyana Gṛhyasūtra Edited by Swami Ravi TirthaVolI- Adhyaya 1,The Adyar Library 1944)

अष्टाध्यायीVI. 4.26.

अष्टाध्यायी V. 4.32

अष्टाध्यायी V. 4.30.

अष्टाध्यायी IV. 2.2

(रागसंख्यां बीजकलां ... रञ्जनं ... **वर्णोत्कर्षं** मृदुत्वञ्च ... यो वेत्ति स गुरुर्मतः। Rasarnav. 2.5)

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