DYES (incl. Food colorants)

NPARR, 7(1), 2016-10 Comparison of the ionizing radiation effects on cochineal, annatto and turmeric natural dyes

As studies on radiation stability of food dyes are scarce, commercially important natural food grade dyes were evaluated in terms of their sensitivity against gamma ionizing radiation. Cochineal, annatto and turmeric dyes with suitable concentrations were subjected to increasing doses up to 32. kGy and analyzed by spectrophotometry and capillary electrophoresis. The results showed different pattern of absorbance versus absorbed dose for the three systems. Carmine, the glucosidal coloring matter from the scale insect Coccus cacti L., Homoptera (cochineal) remained almost unaffected by radiation up to doses of about 32. kGy (absorbance at 494. nm). Meanwhile, at that dose, a plant-derived product annatto or urucum (Bixa orellana L.) tincture presented a nearly 58% reduction in color intensity. Tincture of curcumin (diferuloylmethane) the active ingredient in the eastern spice turmeric (Curcuma longa) showed to be highly sensitive to radiation when diluted. These data shall be taken in account whenever food products containing these food colors were going to undergo radiation processing [Cosentino, H.M., Takinami, P.Y.I. and del Mastro, N.L. (Mackenzie Presbyterian University, R. da Consolação 930, 01302-907 SP, Brazil), Radiation Physics and Chemistry, June 05, 2015].

NPARR, 7(1), 2016-11  Formulation and evaluation of lip jelly by replacing synthetic colorants with colorants extracted from Bixa orellana seeds

Cosmetics are incredible in demand. Cosmetics includes various formulations. Among them, lip jelly is having very appreciable contribution in it. Lip jelly is having similar properties as compared to lipstick and lip balm which prevents the lips from environmental factors and colors them. Current market uses synthetic colorants in lip cosmetics which have various side effects. Nature is full of colors which are safer to human. The team targeted different plants to extract natural colors from them and use for development of herbal lip jelly. Current formulation involves the development of lip jelly by using natural dye obtained from the seed coat of Bixa orellana. It is evaluated for organolaptic properties like colour, odour, spread ability, pH, melting point, skin irritation, etc. The developed formulation is having no side effects which can be chronically used by the women with great satisfaction [Panchal, C.*, Sapkal, E., Padhiar, J., Deshmukh, S. (Alard College of Pharmacy, Pune, Maharashtra, India), International Journal of Pharma and Bio Sciences, 2015, 6 (2), P37-P41].

NPARR, 7(1), 2016-12  Study of colouring effect of herbal hair formulations on graying hair

The dried aqueous herbal extracts of Gudhal leaves (Hibiscus rosa-sinensis), Jatamansi rhizome (Nardostachys jatamansi), Kuth roots (Saussurea lappa), Kattha (Acacia catechu), Amla dried fruit (Emblica officinalis), were prepared. Coffee powder (Coffea arabica) and Henna powder (Lowsonia inermis) were taken in the form of powder (# 40). Fourteen herbal hair colorants were prepared from these dried aqueous herbal extracts and powders. Activities of hair colorants were observed on sheep wool fibers. On the basis of the above observation six hair colorants were selected. These six formulations were taken for trials on human beings. The formulation coded HD-3 gave maximum colouring effect on sheep wool fibers and human beings and percentage of acceptance among the volunteers were in the following order: HD- 3 > HD- 4 > HD-1 > HD-13 > HD-14 > HD-11. The remarkable results were obtained from five herbal hair colorants, viz., HD-1, HD- 3, HD- 4, HD-13 and HD-14 on sheep wool fibers and human beings. Formulation HD-3, having gudhal, jatamansi, kuth, kattha, amla, coffee and henna, was the
maximum accepted formulation and suggested that these herbs in combination acts synergistically in hair colouring action. It also concluded that jatamansi, present in different hair colorants, was responsible to provide maximum blackening on hair [Singh, V.*, Ali, M. and Upadhyay, S. (Department of Pharmacognosy and Phytochemistry, BBS Institute of Pharmaceutical and Allied Sciences, Greater Noida, India), Pharmacognosy Research, 2015, 7(3), 259-262].

NPARR, 7(1), 2016-13 Extraction and application of natural mordant dyes from Eichhornia crassipes (water hyacinth)

Metallic salts are often added as extra mordant when dyeing the fabrics with natural dyes. Eichhornia crassipes, namely water hyacinth (WH), is an environmentally problematic aquatic weed with high affinity for metals. In this paper, WH was selected as the source of natural mordant dyes, and extracted by absolute ethyl alcohol using a soxhlet apparatus. The colorants in WH were extracted and separated by column chromatography and thin layer chromatography (TLC). UV-visible spectrophotometer (UV-VIS), mass spectrometry, chemical identification with chromogenic reaction and Fourier transform infrared spectroscopy (FTIR) were used to identify the main components of each pigment band. The total metal contents before and after extracting of the WH were determined by using an inductively coupled plasma atomic emission detector. The WH extracts were then used to dye wool fabric. The dyeing properties of WH extracts with and without metal mordant were investigated and compared. The results show that the main components of WH extracts are pheophytin and phyllins. The major metallic elements identified in WH are magnesium, manganese, zinc, and iron. Samples dyed with WH extracts without metal mordant exhibits high K/S values and good dyeing properties. This study indicates that the WH extracts can be used as a natural mordant dye on wool fabrics directly [Luo, Y.*, Yang, R., Zhong, Y., Du, J. (College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, Shanghai, China), Journal of Donghua University (English Edition), 2015, 32(5), 764-769].

NPARR, 7(1), 2016-14 Colouration of wool fibre with natural dyes

Dyeing is a complex, specialised science. Nearly all dyestuffs are now produced from synthetic compounds. This means that costs have been greatly reduced and certain application and wear characteristics have been greatly enhanced. This paper reports the use of natural dyes like marigold, onion peels and hibiscus which were applied on wool fabric using mordants i.e. alum, ferrous sulphate and tartaric acid in combination. The various colour changes on wool were measured by computer colour matching software. The range of colour developed on dyed wool fabrics were evaluated in terms of (L*a*b*) CIELAB coordinates and the dye absorption on the wool was studied by using K/S values. The fastness properties of the dyed samples were found to be quite satisfactory. The fabric thus dyed can be used for apparel purpose [Teli, M.D. and Valia, S.P. (Department of Fibres and Textile Processing Technology, Institute of Chemical Technology, India), Journal of the Textile Association, 2015, 76(2), 73-77].

NPARR, 7(1), 2016-15 Utilization of Quercus robur L. (fruit cups) and Salix alba L. (wood extract) as dyeing agents for silk and cotton fabrics

Investigation was carried out to study the dyeing potential of Quercus robur L. and Salix alba L. of which fruit cups and wood extract were used as source of natural dye and mordant. Dyeing potential of the extracted material was tested on silk and cotton fabrics. Keeping in view the negative impacts of chemical agents, extraction and application was carried out using distilled water. Natural mordant used in
combination with natural dye showed satisfactory results on silk fabrics both including and excluding mordant, however, poor quality of dye and mordant was recorded on cotton fabric. The natural mordant gave silk fabrics rapid dye adsorption, enhanced colour coordinates, K/S, AE and also showed improvement in fastness properties with regard to washing, light and rubbing of the dyed silk fabric. Cotton fabric does not showed much affinity for the natural dye and mordant [Geelani, S.M.*, Bhat, S.J.A., Qazi, G., Qasba, S., Qureshi, S., Parray, A.A., Mishra, P.K., Ara, S., Sofi, A.H., and Khan, P.A. (Division of Environmental Sciences, SKUAST-K, Shalimar, J and K, India), Journal of Industrial Pollution Control, 2015, 31(2), 259-266].

Hair color is affected not only by genetic, age, and environmental factors, but also by the regulation of many cytokines and proteins. The generation of melanin is mainly regulated by POMC, α-MSH, MC1R, MITF, tyrosinase, TRP-1, TRP-2, ASIP, etc. Hair color anomaly is often considered to be a feature of aging which brings great psychological pressure to the people, but the treatment by relevant drugs is still blank. This article summarizes the effect target and the function ways of those natural medicines with great efficacy on the treatment of hair graying. This review may provide some theoretical basis for the application of natural medicines in the treatment of hair graying [Han, M. N.*, Li, Y.-F., Lu, J.M., Yu, J. and Zhao, R.H. (College of Chinese Materia Medica, Yunnan University of Traditional Chinese Medicine, Kunming, China), Chinese Traditional and Herbal Drugs, 2015, 46 (9), 1393-1398].