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Preparation and physicochemical characterization of ingredients of Indian traditional medicine: Mahamrutyunjaya Rasa

Pallavi Lavhale

RamEesh Institute of Vocational and Technical Education, India

Mahamrutyunjaya Rasa is an ayurvedic formulation used in the treatment of cardiac disorders. It contains roots of *Aconitum ferox*, *Solanum indicum*, fruits of *Piper longum*, *Piper nigrum*, Sulphur, Cinnabar and Sodium Metaborate. As per traditional literature (Bhaishjaya Ratnavali), some raw materials need purification (Shodhana) before incorporation in the formulation. This work presents a comprehensive physicochemical characterization of raw materials, intermediates and the final product obtained during purification, using modern analytical techniques. The Fourier transform infra-red spectroscopic analysis of the alkaloidal extracts of *Aconitum ferox* showed loss of an ester group with shift in the peaks from 1720 cm^{-1} (C=O stretching of esters) to 1676 cm^{-1} (C=O stretching of ketone) which signifies the conversion of alkaloid aconitine (LD50-0.08 mg/kg) to benzoyleaconine (LD50-24 mg/kg) improving its safety. The analysis of sulphur by X-ray diffraction and differential scanning calorimeter showed that purification brought about transformation of orthorhombic sulphur into monoclinic sulphur and it reverted back to original form with higher purity. The treatments given to sulphur and cinnabar with organic compounds made them homologous to the body tissues. Analysis of purified sodium metaborate showed that the processing led to loss of water and slight change in the crystal structure with the shift in the endothermic peak from $110.6\text{ }^{\circ}\text{C}$ to $104.2\text{ }^{\circ}\text{C}$. Thus, the present study provides a scientific backing to the methodologies used by Ayurvedic practitioners. The study also provides physicochemical fingerprints for the standardization as well as characterization of raw materials and forms a technical platform for manufacturers to develop quality control standards.

Biography

Pallavi Lavhale completed her MPharm, PhD from The M S University of Baroda, Vadodara, Gujarat, India in 2010. Presently, she is working as Associate Professor and Department Head (Phytochemistry and Pharmacognosy) at RamEesh Institute of Vocational and Technical Education, Greater Noida. She has expertise in the field of phytochemistry, quality control and standardization of herbal/ayurvedic formulations, analytical method development-validation for herbal/ayurvedic formulations and intellectual property rights. She has published a number of papers in national and international journals and participated in a number of conferences.

raipallav@gmail.com

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