SECTION A

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Determination of the concentrations of copper and iron in selected Ayurvedic preparations

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Natural inorganic minerals have been used as raw materials in Ayurvedic medicines. The properties, toxic effects, purification methods and clinical indications of these minerals in a single drug or combination with other materials in the formula are described in Ayurvedic texts. Sadilingam, Mayuratatu, Haritala, Manoseela and Siwanguru are mineral compounds that are widely used as major raw materials in drug preparations. They are enriched with minerals containing Mercury (Hg), Copper (Cu), Arsenic (As) and Iron (Fe). Hence determination of the concentration of metals in raw materials and pharmaceutical preparations and the concentration of this metal in the finished products is of utmost important.

Using the prescribed raw materials including minerals, Buddaraja kalkaya, Seetharama watee and Pushyanuga choornaya were prepared according to the methods described in the Ayurveda pharmacopoeia. Simultaneously commercially available samples of these drugs were also collected from the local market. The Cu and Fe contents were determined in the raw materials, the prepared drugs and the collected drugs using Atomic Absorption Spectrophotometer (AAS).

Copper concentration in Mayuratatu, which is a raw material for Buddaraja kalkaya and Seetharama watee was 43.90±0.01 mg/g and after purifying the raw material it was 85.67±0.01 mg/g. In prepared Buddaraja kalkaya Cu concentration (0.08±0.01 mg/g) was less than in the commercially available drugs (mean 0.49±0.13 mg/g). Prepared Seetharama watee contains lower Cu concentration (0.92±0.01 mg/g) than the commercially available drugs (2.11±0.28 mg/g). Although mineral containing Fe was not used as a raw material, high Fe concentration was detected in prepared Buddaraja kalkaya (0.23±0.01 mg/g) and Seetharama watee (0.77±0.00 mg/g) than in the commercially available drugs (0.09±0.01 and 0.52±0.01 mg/g respectively). Iron concentration in Siwanguru which is a raw material for Pushyanuga choornaya was 102.27±0.01 mg/g and after purifying the raw material it was 357.86±0.03 mg/g. Prepared Pushyanuga choornaya contains high Fe concentration (8.88±0.03 mg/g) than commercially available drugs (1.74±0.70 mg/g). Cu was not present in a detectable levels in all samples of Pushyanuga choornaya. It can be seen that quality controlling aspects have to be implemented in the manufacturing process to avoid the variation of metal concentrations in different brands of the same drug.

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