

Thermal Analysis of the samples of *Tamra Bhasma* Prepared by Different Ayurvedic Pharmacies

M. Wadekar^{C,S}

Division of Biochemical Sciences, National Chemical Laboratory, Pune, India
m_p_wadekar@yahoo.co.in

R. Lad, S. Takale, R.D. Kankaria and B.A. Kulkarni

Post Graduate Chemistry Department, Bharati Vidyapeeth Deemed University, Pune, India

Tamra bhasma, prepared from metallic copper is a famous ayurvedic preparation. It is a versatile drug and specially recommended for all sorts of complaints related to liver and spleen, tumors, dropsy etc. It is synthesized by a variety of methods developed by ayurved pharmacists which may be classified into three main categories. These categories are based on methods involving use of (a) mercury and sulfur (traditionally called as *kajjali*) (b) Sulfur purified according to ayurvedic procedure (c) plant materials.

Pure copper in the form of powder, small pieces, or very thin sheets is the starting material for all methods. This copper is subjected to a number of processes which include repeated calcinations in combination with specific plant juices. The end product of each method is assumed to be *tamra bhasma*.

As a consequence of huge diversity in synthetic procedures it is difficult to know whether *tamra bhasma* prepared by different methods is identical or variable because no systematic work has been carried out from this point of view.

The success of preparing a genuine ayurvedic *bhasma* depends on the technique of heat treatment (called as *putas*) to the homogeneous paste prepared by mortaring microfinned metal thoroughly mixed with appropriate plant juices. Normally a large number of calcination cycles are necessary and for each cycle the process of mortaring the microfinned metal and plant juice is to be freshly repeated. Therefore synthesis of these *bhasmas* is a complicated and tedious procedure.

Due to increasing popularity of ayurvedic medicines, the number of ayurvedic pharmacies is rapidly expanding for commercialization of the reputed ayurvedic drugs.

Therefore, an examination of different commercial samples using modern analytical techniques is a present need. Thermogravimetry is expected to be one of useful techniques, because thermograms of the *bhasmas* may throw light on (a) thermal stability of the samples as a whole as well as of its major constituents (b) Nature of decomposable materials, if present (c) difference or similarity of different samples under study.

Five representative samples of *tamra bhasma* prepared by reputed ayurvedic pharmacies from India are selected for thermal analysis in the temperature range (30-900) °C. The results are very interesting to understand the current status of the commercial samples. These results are also supported by XRD and spectroscopic techniques.