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Introduction
Ayurveda is an empirical science of ancient India aiming both on the preventive and curative aspects. More than 1200 diseases\(^1\) are mentioned in different classics of Ayurveda. Curative management of these diseases is rendered by means of various natural products of plant, minerals and animal origin. About 5.24% of Ayurvedic compositions are composed with metal and mineral drugs\(^1\) of which iron (louha) is one of the important ingredients. Every living thing like plants, animal, human beings, bacteria and even cancer cells need iron to survive and grow\(^2\). Louha is used in Ayurveda for eradications of many diseases of which iron deficiency anemia vis a vis ‘Kaphaja Pandu’ is most important disease. Iron deficiency anemia (IDA) remains one of the most severe and important nutritional deficiencies, affecting more than 200 million people in the worldwide. In India, for example, up to 88% of pregnant and 74% of non-pregnant woman are affected. IDA is caused by defective synthesis of haemoglobin, resulting in smaller than normal red cells (microcytic) and containing reduced amounts of haemoglobin (hypocromic)\(^3\).

The supplemental iron is given in the form of drugs like, ferrous sulphate, ferrous gluconate and ferrous fumarate. All three compounds, however are associated with a high incidence of side effects, including nausea, constipation, and diarrhea\(^4\). Modified release preparations have been developed to reduce side effects but practically this is expensive and often releases the iron beyond the sites of optimal absorption. Iron injection corrects deficiency faster, but is painful and carries the risk of dangerous allergic reactions\(^5\).

According to Ayurveda anemia can be compared with Pandu Roga. On the other hand iron-deficiency anaemia may be specifically related with Kaphaja Pandu Roga and Mrithbhakshyanaja Pandu Roga while, iron is used both in prophylactic and curative aspect. It is described in Ayurveda\(^6\) for multifaceted activities, like-

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\begin{align*}
\text{Ayuh Pradata Valavirtyakarta Rogapahartha Madanasyadhata} \\
\text{Ayah Samanang Nahi Kincidasti Rasayanang Sresthatamang Naranam} \\
\text{Rasendra Sāra Saṅgrah//348//}
\end{align*}
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The calcined (putas) iron preparation in Ayurveda is known as louha bhasma. ‘Puta’ can be defined as a series of Ayurvedic procedure for preparation of metallic drug under specialized technique of ignition to achieve final end product. Preliminary studies have revealed that different putas of louha
bhasma have got different proportion of iron and other metals and these possess, as claimed in Ayurveda, potential effect in iron deficiency anaemia. Hence, it was thought worthwhile to investigate the different putas of louha bhasma in detail, i.e., its physical and chemical characterizations and its potential anti-anemic and immunomodulatory properties both in experimental animals and in human subjects.

In iron deficiency anemia, there is a multi-complex change in the body including alteration of body immunity. No such reports are available with any form of iron, either synthetic or natural (Ayurveda, etc), for their additional activities relevant to immuno-modulation beside iron deficiency anemia. Detail chemical study is also not performed with Ayurvedic forms of iron preparations. The main aim of the present study is scientific exploration of Louha Bhasma, prepared by traditional approach, at chemical, pharmacological, clinical and mechanistic study with special reference to immunomodulation.

Reference

2. Iron Disorders Institute is a 501(c)3 voluntary health public interest organization headquarters in Greenville, South CarolinaCorporate Headquarters: 2722 Wade Hampton Blvd, Suite A Greenville, SC 29615 864-292-1175.
6. Rasendra Sāra Saṅgrah///348//