

Toxicity of heavy metals in Totapuri mango in Chittoor district of Andhra Pradesh

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SUMMARY: The present study is an attempt to assess the extent of toxic metals, including Cd, Cu, Pb, Ni, Zn and As in Totapuri mango variety collected from richly growing orchards of Chittoor district of Andhra Pradesh. Metals are essential for maintaining human health throughout life and food production and its safety is an important aspect of the measure of the any nation's growing economy and it is a popular trend to find out the trace elements and metal contents. In the present investigation, heavy metals viz., Cd, Cu, Pb, Ni, Zn and As were estimated by Atomic absorption spectroscopy, which indicated that the highest concentrations were observed with a elevated concentrations of Cd, As and Pb metals ranging from 0.222 ± 0.54 to 0.416 ± 0.32 , 0.444 ± 0.65 to 0.722 ± 0.36 , and 0.04 ± 0.23 to 0.48 ± 0.12 , respectively and the remaining metals were present within the limits of the FAO/WHO guidelines. The impact of trace metals in higher concentrations on human health and its implications were discussed.

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Mango, Totapuri,
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Mango (*Mangifera indica* L.) is considered as one of the most popular fruits among millions of people grown throughout the tropics and subtropics worldwide. India is the world's largest producers and it is an emerging tropical export crop produced in about 90 countries in the world. Andhra Pradesh ranks first in production and Chittoor district ranks second and much economy to the fruit industries. Contamination of food and food products are the major public concern world wide and during the last decade, the increasing demand of food safety has stimulated research regarding the risk associated with consumption of food stuffs contaminated by pesticides, heavy metals and toxins (D'Mello, 2003). The implication associated with heavy metal contamination is of great concern, particularly fruits and their products which affect the annual income of the mango farmers and exporting industries. Moreover, these metals can pose a significant health risk to humans, particularly in elevated concentrations above the

very low body requirements (Gupta and Gupta, 1998). Fruits are an integral part of human diet as they supply vitamins and minerals, the important constituents essential for human health (Mumzuroglu *et al.*, 2003) and the mangoes are most important source of vitamin A and C besides remarkable medicinal properties. The assessments of these nutrients in various raw foods depend on source, body burden and locality (Tahvonen and Kumpulainen, 1995; Cabrera *et al.*, 1995). Safe limits of toxic elements are applied in most instances because of first, possible toxicity of the element and second, the feasibility of the limit in relation to good manufacturing practice. An element is essential when it is consistently determined to be present in all healthy living tissues and its deficiency symptoms are noted, depletion or removal.

Agricultural activities have been identified as contributors to increasing toxic metal contamination through the application of various types of pesticides and fertilizers. The information

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