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Toxic Metals in Selective Medicinal Plant Extracts of Nagaram Region, Andhra Pradesh, India

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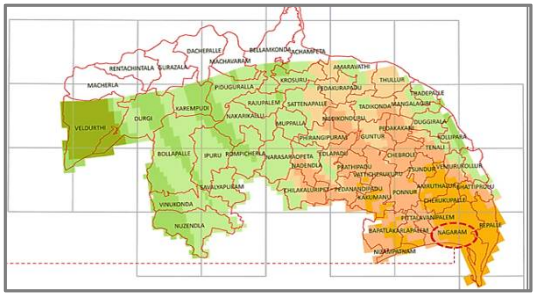
ABSTRACT

Metals compositions in selected 10 medicinal plant species from Nagaram region, Andhra Pradesh, India were studied in order to understand their mechanism of treatment. Identified medicinal plants were Mimosa pudica, Ocimum sanctum, Allium cepa, Allium sativum, Zingiber officinale, Azadirachta indica, Calotropis procera, Capsicum frutescens, Emblica officinalis, and Curcuma longa.These plant species, especially those used in the treatment of diseases such as hypertension, diabetes and asthma may require long term usage. Samples were analysed for elemental composition by using Flame photometer (Na and K) and Atomic Absorption Spectrophotometer for metals (Ca, Mg, Mo, Co, Cu, Fe, Mn, Zn and As). The main purpose of this study was to document evidence of essential and non-essential heavy metals in these plant species, which are extensively used in the preparation of herbal products and standardized extracts.From the results of the study zinc and manganese were present in high concentrations among the plant species examined. Among the section of plants, the highest metal content was seen in the latex of Calotropis procera. Highest Na concentration was found in the latex of Calotropis procera, 280 mg kg^{-1} and roots of Mimosa pudica, 8860 mg kg^{-1}, respectively. Mn content was very high in the rhizome of Zingiber officinale (554.20 mg kg^{-1}), Fruit of Emblica officinalis (182.74 mg kg^{-1}) and rhizome of Curcuma longa (331.82 mg kg^{-1}). Zn content is usually high in all samples ranged from 22.68 to 86.42 mg kg^{-1}, highest seen in leaves of Ocimum sanctum.

Graphical Abstract



Sample area location

Keywords: Health implications, Metals, Formulations, Medicinal plants.