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Major and trace elements in medicinal plants

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Medicinal plants have been used for centuries to treat various ailments in folk cultures throughout the world. The therapeutic effect of the plants is based on the chemical constituents present on them. Medicinal plants contain both organic and inorganic constituents. Several studies have been made on the organic constituents, some of which have biological activity but none act independently and cannot replace the function of medicinal plant as a whole. The investigation on the inorganic constituents of the plants thereby providing a possible link to the curative medicinal values is highly essential. So the quantification of major and trace elemental content of medicinal plants is very important as they are essential for the proper functioning of life processes. Many clinical and pathological disorders also arise in living beings as a consequence of trace element deficiencies or excesses. Smaller concentrations result in different abnormalities and higher concentrations result in toxicity. It is also necessary to emphasize here the role of interdisciplinary research teams consisting of physicists, biologists and medical specialists to establish a possible link of major and trace elemental content to the medicinal value of the plants in folk cultures. In the present article, the qualitative and quantitative analysis of medicinal plants was carried out by Proton Induced X-ray Emission (PIXE) and Proton Induced Gamma Ray Emission (PIGE) techniques. PIXE and PIGE are rapid, simultaneous, non destructive multi-elemental analysis techniques. PIXE provides multi-element quantitative determination of elements with atomic no. (Z)>11, down to parts per million (ppm) levels while PIGE is a complementary technique and enables sensitive determination of elements up to Z<20. The correlation of major and trace elemental content in anti-asthmatic and anti-urolithiatic plants with their medicinal value will be discussed in this presentation in connection with the role of major and trace elements in the treatment of asthma and lithogenesis as reported in medical science. It is an attempt to highlight the possible scientific justification behind the therapeutic medicinal value of these plants in folk culture for centuries.

Biography

R K Bhanisana Devi has completed her PhD in 2004 from Manipur University, Manipur. She has carried out research projects under University Grants Commission (UGC) and Department of Atomic Energy (DAE) (BARC) sponsorship. She is currently working as a Principal Investigator under DST (WOS-A) Scheme, Government of India. She has contributed many research papers in national and international reputed journals. She has also presented many research articles in national and international conferences.

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