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Analysis of Trace Elements in Some Traditional Medicinal Plants and Developing Nuclear Forensic Signature

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Medicinal plants are the most sensitive factors that show the interaction between human activities and the ecological environment. The aim of this study is developing the therapeutic trace elements and nuclear forensic signature in medicinal plants of East Gojjam using nuclear techniques as tools. The samples from medicinal plants were accurately weighed and transferred into the irradiation as well as digestion vessel, and introduced into a nuclear reactor and inductively coupled plasma mass spectrometry. Then the induced activities of the radionuclides were counted by calibrated detector. The results were discussed with careful references (NIST 81 materials) to establish role of essential elements in the physiology and pathology of human life. The data obtained on the elemental concentration of the medicinal plants will be useful in deciding the dosage of the traditional drugs prepared from these medicinal plants. Nuclear forensics involves the interpretation of elemental contents (Na, K, Mn, Fe, Co, Zn, Se, Br, La, Sm, As and Eu) of medicinal plants and will acquire understanding of production of radioactive isotopes by irradiation, detection and identification methods. Lead isotope ratios ($^{204}\text{Pb}/^{206}\text{Pb}$, $^{208}\text{Pb}/^{206}\text{Pb}$ and $^{207}\text{Pb}/^{206}\text{Pb}$) and Rare Earth Elements (REE) also show significant spatio-temporal variability along the study areas. The traditional knowledge of plants for medicinal purpose has been passed from generation to generation orally. The present research work will be helpful to traditional doctors, scholars, budding students and scientists to share their research findings with the global experts in the areas of traditional medicines.

Keywords: inter-elemental correlations, traditional doctors, indigenous use, rural areas

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N/A

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Primary author: ASRES, Yihunie H. (North West University (Mafikeng), postdoctoral research fellow at CARST)

Presenter: ASRES, Yihunie H. (North West University (Mafikeng), postdoctoral research fellow at CARST)

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