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Economic potential and trade dynamics of medicinal plants: Implications for biodiversity conservation and climate-resilient livelihoods

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Abstract

Medicinal plants play a crucial role in supporting rural healthcare systems and livelihood diversification in many parts of sub-Saharan Africa. However, increasing commercialisation of wild-harvested medicinal plants raises concerns about the sustainability of harvesting practices and the conservation of plant biodiversity. This study assessed the economic potential and market dynamics of two commonly traded medicinal plant species, Zanthoxylum chalybeum and Commiphora species, in northern Tanzania. The research was conducted in Arusha Municipal Council, Karatu District Council, and Babati District Council, areas located near ecosystems where these species naturally occur and where traditional medicine markets are active. A cross-sectional mixed-methods approach was employed, combining quantitative market surveys with qualitative interviews of traditional medicine practitioners and vendors.

Data were collected from 227 respondents using structured questionnaires administered through KoboToolbox. Information gathered included plant species sold, plant parts used, diseases treated, dosage duration, quantity traded, and price per unit. To enable standardised economic analysis, commonly sold retail units such as spoonfuls and small bundles were converted into grams and kilograms using digital weighing scales. The results indicate active commercialisation of both species across the study area. Monthly trade volumes were estimated at approximately 15.25 kg for Zanthoxylum chalybeum and 4.65 kg for Commiphora species, with corresponding market values of about TZS 1.5 million and TZS 862,600, respectively.

The findings highlight the significant economic contribution of wild medicinal plants to local livelihoods and traditional healthcare systems. However, the reliance on plant parts such as roots and resin raises sustainability concerns due to destructive harvesting practices. Strengthening sustainable harvesting guidelines, promoting cultivation of high-value medicinal plants, and integrating traditional knowledge into biodiversity conservation

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strategies could enhance the role of the medicinal plant trade in supporting climate-resilient and multifunctional agro-ecosystems in Northern Tanzania.

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