In marketplaces around the world, from Buenos Aires, to Benin, to Baghdad, people trade medicinal plant products. These herbal medicines are often culturally important and their use dates back many generations. Local demand for herbals has grown with increasing urbanization and welfare, and plant species that were available in the past may now have become scarce due to over-harvesting or degradation of natural habitats. As species become rare, people may also opt to substitute similar alternatives for the original species, but incentives for adulteration emerge as well. Understanding what species are traded today can help us to monitor trade in threatened and endangered species and to detect potentially harmful adulteration with toxic species. Plant products such as bark, roots and powders are hard to identify, and DNA barcoding has helped us to shed light on this trade.

Marrakech is a crossroads of biological and cultural diversity, situated at the foot of the High Atlas range. The medina of Marrakech has a bustling market full of herbalist shops with jars of roots and piles of fragrant spices, wholesalers with burlap sacks from across Northern Africa and ambulatory traders with freshly picked spices and produce from the mountains. The Arabs and Amazigh have been trading plants here for ages and collectors, middlemen, retailers and consumers have abundant knowledge of herbal remedies, spices and talismans.

Extensive research by the Global Diversity Foundation (GDF) has found that over 300 species of plants and 80 species of animals are currently commercialized in southern Morocco. Identification of roots and barks has relied on matching of vernacular names to traditional pharmacopoeias and in many cases species identity has been far from certain. In collaboration with GDF, we used DNA barcoding to investigate which medicinal roots are really commercialized. A regional reference database was created of putative species and their sister taxa and sequence data from both plastid (\textit{matK}, \textit{psbA-trnH}, and \textit{rpoC1}) and nuclear (nrITS) markers. The reference database and query sequences were submitted to Barcode of Life Datasystems (BOLD), and BLAST was used to match query sequences from roots purchased in the medina. Out of 83 samples, 56\% were identified to species level and another 36\% to genus level. In 18\% of the cases, identification differed from hypotheses based on vernacular names. In a follow-up study into four complexes of medicinal root products with high morphological variety, 47 roots were sampled and yielded 91\% species level identifications. Here each complex comprised more than one species, but none of the ones previously asserted based on previous literature.

\textbf{Our study} shows that the majority of the traded roots belong to species that are common and not known to be endangered. Nevertheless, endemic plant species are commercialized in Marrakech and species adulteration is common. A significant conclusion from our studies is that DNA barcoding is a powerful tool for identification of unknown samples as long as comprehensive reference data are available. It also underlines the importance of DNA barcoding for monitoring of trade in endangered plant species, as identifications based on folk taxonomy can vary widely in accuracy.

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