Due to the increased contact between disparate human populations and the development of a global trading system, the number of species upon which global food security and agricultural incomes depend narrowed drastically. More than half of today’s needs for energy are met by maize, wheat and rice. The impact of the species base narrowing is mostly felt most by the rural communities in marginal areas, where the set of livelihood options is limited. Many neglected/underutilised species occupy important niches, perfectly adapted to the local fragile conditions, contributing to sustainable production with minimal inputs as well as to the diversity and the stability of agro-ecosystems. The scientific community, as well as the food industry, know the only a minimal share of Zambian food plants. Therefore, our study focused on the chemical composition of oils and cakes of three neglected but traditionally important oil-bearing plants, namely: Parinari curatellifolia, Schinziophyton rautanenii and Ochna serrulata, in surroundings of Mongu, Western Province, Zambia.

P. curatellifolia and S. rautanenii oils were chiefly composed of -eleostearic acid (28.58–55.96 %), linoleic acid (9.78–40.18 %), and oleic acid (15.26–24.07 %), whereas O. serrulata contained mainly palmitic (35.62–37.31 %), oleic (37.31–46.80 %), and linoleic acid (10.61–18.66 %). Vitamin E of S. rautanenii oil was mainly composed of -tocopherol (3236.18 g/g); O. serrulata contained similar proportions of - (287.37 g/g) and -tocopherol (361.11 g/g), whereas P. curatellifolia had negligible levels of vitamin E. All three species can be considered as a good source of essential minerals. The results suggest great potential of the traditional Zambian species to be introduced into food, technical and/or pharmaceutical industry. Especially O. serrulata deserves deeper research attention, because of the considerable quantities of -tocopherol in its oil which exhibits non-rancid properties. Due to the nutrient-rich cakes, the tested species might be also promising for animal fodder fortification.

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