USING SPME-GC-MS AND SENSORY ANALYSES AS TOOLS IN DEVELOPING APPROPRIATE KGALAGADI DESERT TRUFFLE (KALAHARITUBER PFEILLII) PRODUCTS IN BOTSWANA


Although desert truffles fetch lower prices than their forest counterparts, such as black truffles, and white truffles, they are still a high-value product. Historically, Kalaharituber pfeillii (formerly Terfezia pfeillii), harvested between May and July, was purely for household consumption in marginalized desert areas. By the year 2000, K. pfeillii was rarely sold; currently it costs about $6/kg. At a 20-27% content of highly digestible protein, K. pfeillii is quite nutritious, with high levels of potassium and phosphate. The current work seeks to use volatile organic compound- (VOC) and sensory analyses as tools for guiding development of appropriate food security enhancing products. Fresh raw-, and dried raw K. pfeillii samples were analyzed by SPME-GC-MS for VOCs. Thereafter, freshly-prepared K. pfeillii patés and stirfries, together with their matured versions, were developed and subjected to consumer sensory analysis for colour, aroma, taste, texture and overall acceptability. SPME-GC-MS results showed a wide diversity of VOCs, including hexanal, OH-butane, dihydro-furanone, octenol and epoxyactane. Dried K. pfeillii samples had less VOCs than fresh ones. Colour of patés and stirfries, though acceptable to the consumer panel, was the only attribute where there were highly significant differences in acceptance. For two of the three stirfries, colour and aroma were most valued; addition of eggs to the third stirfry compromised these attributes. Overall, only the freshly-prepared paté was not acceptable; interestingly, the matured paté was the most popular product, its most important attributes being texture and taste. SPME-GC-MS and sensory analysis effectively guided appropriate K. pfeillii product development.