

Contribution of aroma compounds to the antioxidant properties of roasted white yam (*Dioscorea rotundata*)

ABSTRACT

Background: The aroma chemistry and the contribution of the aroma compounds to the anti-oxidative properties of roasted yam have yet to be characterized. The growing popularity of roasted yam in regions where they are being consumed calls for a concerted effort to elucidate their aroma chemistry as well as their anti-oxidative properties.

Results: The aroma compounds in roasted white yam (*Dioscorea rotundata*) were isolated and identified using static headspace-gas chromatography-mass spectrometry (SH-GC-MS) and gas chromatography-olfactometry (GC-O). In addition, the anti-oxidative activities of the most abundant volatile heterocyclic compounds (2 pyrroles, 4 furans and 3 pyrazines) were evaluated on their inhibitory effect towards the oxidation of hexanal for a period of 30 days. Twenty-nine aroma-active compounds with a flavour dilution (FD) factor range of 2–256 and an array of odour notes were obtained. Among them, the highest odour activities ($FD \geq 128$) factors were determined for 2-acetyl furan and 2-acetylpyrrole. Other compounds with significant FD factors ≥ 32 were; 2-methylpyrazine, ethyl furfural, and 5-hydroxy methyl furfural.

Conclusion: Results of the anti-oxidative activity showed that the pyrroles exhibited the greatest antioxidant activity among all the tested heterocyclic compounds. This was followed by the furans and the pyrazines which had the least antioxidant activity.

Keyword: Roasted white yam; Aroma-active compounds; Antioxidant activity