Antioxidants from palm (*Elaeis guineensis*) fruit extracts

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Background - Phenolic compounds have been shown to exhibit bioactive properties, and in particular antioxidant effects. A phenolic-rich fraction has been isolated from the aqueous by-product obtained during the milling of oil palm fruits (1).

Objective - To characterise the phenolic compounds obtained from crude and ethanolic extracts of oil palm fruits and to evaluate the antioxidant properties of these extracts.

Design – Characterisation of the profile of phenolics by NMR spectroscopy and evaluation of antioxidant properties using the 1,1-diphenyl-2-picrylhydrazyl radical ($DPPH^{\cdot}$), reducing power, and hydrogen peroxide scavenging assays.

Outcomes - NMR studies indicate that both extracts consist of mixtures of sugars and phenolic compounds, of which gallic acid and 4-hydroxybenzoate predominate. The antiradical power (ARP, mole ratios expressed in arbitrary units) of the crude extract (3.14) and ethanol extract (3.31), measured by the $DPPH^{\cdot}$ assay were comparable to the ARP of ascorbic acid (3.78). Crude and ethanol extracts of 1mM gallic acid equivalence (GAE) had reducing powers comparable to that of 0.3 mM gallic acid. In the hydrogen peroxide scavenging assay, 100% scavenging was achieved at concentration of 0.3 mM GAE for both crude and ethanol extracts.

Conclusions - These findings suggest that oil palm fruit extracts are able to act as primary antioxidants by their hydrogen- and electron-donating capacity. Similar findings have been reported for extracts from olives and tea. These preliminary observations also suggest that oil palm fruit extracts are potential sources of nutraceuticals.

1. Tan, YA, Sundram, K, Sambanthamurthi, R. Water-soluble phenolics from the palm oil industry. In: Pfannhauser, W, Fenwick, GR, Khokhar, S, eds. Biologically-active Phytochemicals in Food. Cambridge:The Royal Society of Chemistry, 2001; pp 548-551.