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Cytotoxicity and effect of extraction methods on the chemical composition of essential oils of *Moringa oleifera* seeds

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Key words: *Moringa oleifera* seed, Extraction methods, Essential oil, Cytotoxicity

Research Summary

- This work focused on the chemical constituents of *Moringa oleifera* essential oil extracted by Solvent-free Microwave (SME) and Hydro-distillation (HDE) methods. Cytotoxicity of the oils was investigated using hatchability and lethality tests on Brine shrimps.
- Shrimp larva lethality was significant ($P<0.05$) between HDE and SME oils at different concentrations and incubation period.
- The LC_{50} of the oils were >1000mg/mL recommended as an index for non-toxicity, which gives the oil advantage over some antioxidant, antimicrobial, therapeutic and preservative chemicals.

Innovation points

Series of comprehensive Tables and Figures were generated to summarize the latest knowledge about the extracted *Moringa oleifera* seed essential oils extracted by SME and HDE methods

Table 1: Chemical compounds of the essential oil of *Moringa oleifera* seeds extracted using solvent-free microwave extraction and hydro-distillation methods
Table 2: Mortality of Brine shrimp larvae as indicated by LC_{50} in differently extracted *Moringa oleifera* seed essential oil
Figure 1: Hatchability success of Brine shrimp eggs at different period of incubation in the essential oil of *Moringa oleifera* seeds extracted by different methods
Figure 2: Hatchability of Brine shrimp eggs incubated in different concentrations of the essential oil of *Moringa oleifera* seeds extracted by different methods
Figure 3: Mortality of Brine shrimp larvae incubated in different concentrations of the essential oil of *Moringa oleifera* seeds extracted by different methods.
Figure 4: Mortality of Brine shrimp larvae at different period of incubation in the essential oil *Moringa oleifera* seeds extracted by different methods