

Impact of seed variety and seed roasting on physicochemical and sensory properties of cold-pressed sesame oil

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Cold-pressed sesame oils were expelled from single origin varieties of white (*Uma*) and black (MI-1) sesame seeds, commercially available varieties of white (CW) and black (CB) sesame seeds, roasted CW and roasted CB, in triplicate, using a domestic screw-type expeller (DL-ZYJ02, Dulong, China). Seed roasting was done in a natural convection oven (DS-63, Yamato, Japan) at 133±3°C for 20 min. The measured temperatures of the oils being expelled varied in the range of 40 to 50°C. Sesame oils so produced were allowed to clarify by gravity settlement of particles, and then assessed for yield and selected physicochemical and sensory properties.

Moisture content (MC), estimated by Karl Fischer titration, and refractive index (RI) and free fatty acid (FFA), estimated according to Sri Lankan Standards (SLS) methods, of all oil samples complied remarkably well with SLS and CODEX standard. Total phenolic content (TPC) of the oil and oil yields varied significantly among the seed varieties. Extinction coefficients at 232 nm (K_{232}) and 270 nm (K_{270}), estimated according to SLS method, also differed with seed variety. Oils obtained from commercial seed varieties had higher K_{232} and K_{270} values when compared with the oils obtained from single origin seed varieties. K_{232} and K_{270} values are said to indicate the levels of conjugated dienes and trienes which are products of oil oxidations. It is also plausible that they indicated the presence of beneficial lignans in sesame oil, a hypothesis yet to be verified. Sensory evaluation results showed that color, odor and flavor of the oils produced from white seed varieties (*Uma*, CW) were preferred to those produced from black seed varieties (MI-1, CB).

Roasting of commercial seed samples caused significant reduction in yield and MC of oil and no significant changes in RI, FFA and TPC. Roasting of CB seed samples increased K_{270} of the oil produced. Roasting affected positively on the flavor of the oils, but it led to reduced preference for odor and color.

This study demonstrates the potential to produce virgin sesame oil confirming to the globally accepted standards using locally available sesame seed varieties under controlled conditions.

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