

Inhibition of lipid peroxidation in tissue homogenates by selected medicinal oils and their antioxidant activity

Bimali Jayawardena*, Chamara Hiran Jayakody, Kapila N Seneviratne
Department of Chemistry, University of Kelaniya, Kelaniya

This study was aimed at determining the effect of nonsaponifiable fractions of medicinal oils on the inhibition of lipid peroxidation of liver tissue homogenates. Investigations were carried out using oils extracted from the seeds of Domba (*Calophyllum inophyllum*), Mee (*Madhuka nerifolia*), Thala (*Sesamum indicum*) and Aba (*Brassica juncea*). Lipid peroxidation in liver tissue homogenates were analysed by estimating the formations of thiobarbituric acid reactive substances (TBARS).

The inhibition depends on the antioxidant potentials of the four nonsaponifiable fractions of medicinal oils. Antioxidant activity was analysed by several model assay methods, such as linoleic acid method, liposome oxidation method and reducing power method to elucidate the possible mechanism of antioxidant action. Total phenols content of four different nonsaponifiable fractions of medicinal oils were also investigated.

When comparing the amount of TBARS in the liver tissue homogenates, nonsaponifiable fraction of Thala oil indicated the highest amount of TBARS ($131.48 \pm 3.90 \mu\text{mol/g}$), whereas that of Mee oil showed the lowest amount of TBARS ($105.65 \pm 1.90 \mu\text{mol/g}$) with respect to control experiment. This indicates nonsaponifiable fraction of Mee oil offers the best protection against oxidative damage. The amount of TBARS for Domba and Aba are as follows 117.3 ± 1.0 and $121.4 \pm 2.6 \mu\text{mol/g}$.

Total phenol content of Domba, Mee, Thala and Aba oils are 1224.6 ± 138.1 , 1286.53 ± 109.3 , 286.3 ± 54.1 and $434.25 \pm 99.2 \text{ mg/kg}$ of oil respectively. All the model assay methods indicated good correlation between total phenol content and percent inhibition of oxidation. Based on the model assay, it can be concluded that the nonsaponifiable fractions of the oils offers protection against oxidation due to free radical scavenging and reducing ability.

* bimali@kln.ac.lk