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## OXIDATIVE STABILITY OF DIFFERENT TYPES OF COCONUT OILS AGAINST AUTOXIDATION AND PHOTOOXIDATION

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Oxidative stability is an important indicator of oil quality and shelf life. Oxidation brings about a myriad of chemical changes in edible oils. The low molecular weight compounds generate off flavours and odours which make oils less acceptable. Oxidation of oil also destroys essential fatty acids and produces toxic compounds. Autoxidation, photooxidation (photosensitized oxidation) and thermal oxidation are recognized as the major routes for oxidative changes associated with edible oils during processing and storage.

Coconut oil is the most commonly used edible oil in the country which serves as the major source of lipids for Sri Lankans. This study was carried out to evaluate the oxidative stability of four different types of coconut oil commonly available in the local market: traditional copra, white, virgin and RBD coconut oil against autoxidation and photooxidation. The stability of oils against autoxidation was evaluated by storing the oils (5 mL) at an elevated temperature (60°C) for 28 days and assessing the level of oxidation by measuring Peroxide Value (PV), 2-tert Thiobarbaturic Acid Reactive Substance (TBARS), the contents of Conjugated Dienes (CD) and Conjugated Trienes (CT). The effect of light on oxidation of these oils was evaluated by exposing oils (5 mL) to a fluorescent light over 28 days and assessing the level of oxidation by measuring PV, TBARS, CD and CT.

The highest percent increase of PV and CD was shown by virgin coconut oil while white coconut oil showed the least increase during autoxidation. Virgin and traditional coconut oils showed the highest percent increase of TBARS indicating rapid production of secondary and tertiary oxidative products. The highest percent increase of PV was exhibited by white coconut oil while the least increase was shown by virgin coconut oil in photooxidation experiments. The traditional copra oil showed the highest percent increase of TBARS indicating the highest oxidative deterioration under the influence of fluorescent light. However, the major route of oxidation in oils is autoxidation.

Thus, it can be concluded that the white coconut oil is the most stable against autoxidation followed by RBD while virgin oil is highly vulnerable to autoxidation.

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