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INVESTIGATION OF THE ANTIOXIDANT EFFECT OF TWO THIOLS, γ-GLUTAMYL CYSTEINE AND GLUTATHIONE, IN SUNFLOWER OIL UNDER ACCELERATED STORAGE

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ABSTRACT

Sunflower oil is an oil that is prone to oxidation due to its chemical structure and prevention of such oxidation is widely studied. This study assessed the the effectiveness of γ-glutamyl cystein (γGC, GC) and glutathione (GSH), in preventing oxidation of sunflower oil stored at 50°C for a period of 15 days. TBHQ was used as a positive control while no additive oil selected as a negatif control. Oxidation level indicators such as peroxide (*PV*), free fatty acidity (*FFA*), p-anisidine (*p-AV*) but also total oxidation (*Totox*), colour (*L**, *a**, *b**) and fatty acid profile were determined. At the end of storage, oxidation in sunflower oil was substantially reduced by 40 mg/L of GC. Analysis with 2,2-diphenyl-1-picrylhydrazyl (DPPH) resulted in the following order of IC_{50}; T (0.08±0.01), BHA (0.13±0.03), GC (0.3±0.01), GSH (0.41±0.00), BHT (0.42±0.02). The samples resistance to the generation of primary and secondary oxidation products was T>GCT>GC>GSHT>GSH>C for up to 15 days under storage conditions. The fatty acid profile analysed by GC/MS further demonstrated that these thiols outperformed the control group in terms of performance. Findings demonstrated that GC, precursor of GSH, has stronger antioxidant activity than GSH. As a result, it is recommended to be explored as a potential source of antioxidants in applications for the food industry to prevent lipid oxidation.