

IN VITRO ANTIOXIDANT AND ANTIMICROBIAL
ACTIVITIES OF OIL FROM PUMPKIN (*CUCURBITA*
PEPO.L) SEED

001 EE MING

B. Sc. (Hons.) FOOD SCIENCE & NUTRITION
FACULTY OF APPLIED SCIENCES
UCSI UNIVERSITY

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ABSTRACT

Sunflower seed oil (SSO), sunflower seed oil supplemented with butylated hydroxyanisole (SSO + BHA) and pumpkin seed oil supplemented with sunflower seed oil (10% PSO) have different composition of fatty acids; SSO and SSO + BHA contains mostly polyunsaturated fatty acids; PSO contains mostly monounsaturated fatty acid. The aim of this study was to investigate the antioxidant and antimicrobial properties of 10% PSO towards the accelerated storage of oil for up to 18 days. The oxidation stability of SSO, SSO + BHA and 10% PSO were evaluated based on the peroxide value (PV), p-Anisidine value (p-AV), total oxidation (Totox) value and free fatty acid (FFA) content. The degradation of phenolic content was determined by the total phenolic content (TPC). The antimicrobial activities were also tested on the PSO by the disc diffusion method and the minimum inhibitory concentration (MIC) method. Result from the antioxidant tests showed that SSO, SSO + BHA and 10% PSO had significant increased ($p < 0.05$) in PV after the accelerated storage for 18 days. The p-anisidine value of these three oils showed SSO was the highest followed by the 10% PSO and SSO + BHA. SSO + BHA contained the lowest Totox value, followed by the 10% PSO, while SSO contained the highest Totox value. In FFA, there was significant increased ($p < 0.05$) in fatty acid content after the accelerated upon storage. The total phenolic content of fresh SSO, SSO + BHA and 10% PSO were 2.00 ± 0.09 , 2.45 ± 0.02 and 2.37 ± 0.04 mg GAE per 100g of oil, respectively. Percentage loss in TPC after the accelerated storage of 18 days in SSO was the highest (22%); followed by 10% PSO (16.03%) and SSO + BHA (8.16%). In antimicrobial assay using disc diffusion methods, PSO showed inhibition towards the *Serratia marcescens* and *Proteus vulgaris* bacteria strain at the amount of 3mg. PSO also showed inhibition towards the *Penicillium conidia* mold at the amount of 2mg. In minimum inhibitory concentration methods, *Serratia marcescens* and *Proteus vulgaris* bacteria showed minimum inhibition towards the used of PSO at a minimum concentration of 1.2mg/ml. *Penicillium conidia* mold also showed minimum inhibition towards the used of PSO at a minimum concentration of 0.8mg/ml in minimum inhibitory method. As a conclusion, SSO + BHA showed the highest oxidative stability followed by 10% PSO and SSO. PSO had antimicrobial activity towards *Serratia marcescens*, *Proteus vulgaris* and *Penicillium strains*.