ANTIPHOTOXIDATIVE EFFECT AND SENSORY PROPERTIES OF ASCORBIC ACID MICROEMULSION IN VIRGIN COCONUT OIL

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ABSTRACT

During prolonged storage and display at retail outlets, virgin coconut oil (VCO) could suffer from quality deterioration due to photooxidation as indicated by formation of rancid odor. The objectives of this study were to determine the effectiveness of ascorbic acid microemulsion for inhibiting photooxidation of VCO and to evaluate its effects on sensory properties of VCO. The ascorbic acid microemulsion was prepared by mixing ascorbic acid, deionized water, nonionic surfactant mixtures (Span 80, Span 20, and Tween 20), and VCO as continuous phase. Ascorbic acid microemulsion at 50, 100, 150, 200, or 250 ppm was dispersed into VCO. The same levels of ascorbyl palmitate, TBHQ, and BHA were added into VCO and used for comparison. All samples were exposed to fluorescent light (4,000 lux) for up to 8 hours at room temperature (30 ± 1 °C). Peroxide values and p-anisidine values of photooxidized samples were measured at 1 hour interval. Twelve trained panelists were employed to perform sensory evaluation on appearance, odor, taste, and flavor using a Multiple Comparison Difference Analysis method. Descriptive Sensory Analysis was used to identify the difference between treated VCO and the original VCO. Ascorbic acid at a level of 250 ppm was more effective in inhibiting photooxidation of VCO than other antioxidants. The VCO containing ascorbic acid microemulsion had the same characteristics in appearance, odor, taste, and flavor as that of the original VCO. This study confirmed that ascorbic acid microemulsion effectively inhibited photooxidation of VCO during storage without significantly affect its sensory properties.

Key words: Ascorbic acid, microemulsion, photooxidation, virgin coconut oil, sensory properties

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