

## ABSTRACT

The utilization of butter and shortening as fat ingredient for cookies may cause health risks. It increases the LDL cholesterol level in blood which leads to heart disease and stroke. It is recommended to reduce consumption of saturated fats and replace them with unsaturated fats. Unsaturated fats can be obtained from plant-based oil (e.g., sunflower oil) and they can be used as fat replacement in cookies. However, this fat replacement affects the cookie texture, which produce hard texture. Utilization of emulsifier can resolve this problem, thus the effect of emulsifiers with different concentration (0.5%, 1%, &1.5%) in cookies containing sunflower oil were investigated in this research. Cookies with emulsifiers concentrations (i.e., citrus fiber and lecithin) at different and control (without emulsifier) were prepared. Physical analysis and sensory evaluation were conducted. Increase of weight loss, water activity and moisture content were found as the concentration of both emulsifiers increased. In color analysis, L\* values decreased in citrus fiber cookie; while, a\* and b\* values increased along with usage of lecithin.  $\Delta E$  (Total color difference) showed both emulsifiers generated distinct color with the control. The highest spread ratio was found in 0.5% lecithin and the softest cookie was 1% lecithin. As for the sensory analysis, the most acceptable cookie was control, followed by 0.5% lecithin and 1% lecithin sequentially.

*Keywords:* Cookies, Lecithin, Citrus Fiber, Sunflower Oil, Emulsifier