Peppermint and Lemongrass oils had been reported to have bioactive compound that can perform antimicrobial activities. This research was aimed to investigate the characteristic of edible coating made from jackfruit seed starch, plasticizer, and fatty acid (base formulation) with the addition of peppermint and lemongrass oil and its utilization as natural antimicrobial agent to prolong the shelf life of strawberry fruit. Edible films were analyzed in terms of tensile strength, elongation, thickness, and WVTR to determine the three optimum formulations of each essential oil, as well as analyzing the effect of selective combinations on strawberry shelf life stored at room temperature and refrigeration temperature. The edible film was made based on the combination of jackfruit seed starch (3.5 and 4%), glycerol (2 and 3%) stearic or oleic acid (0.4 and 0.6%), peppermint oil (0.1, 0.2, 0.3%) or lemongrass oil (0.3, 0.5, 0.7%). The base formulation (4% starch, 2% glycerol, 0.6% oleic acid) added 0.3% peppermint oil or 0.7% lemongrass oil were chosen due to high tensile strength, high elongation, and also WVTR; (4% starch, 2% glycerol, 0.4% stearic acid) with 0.3% peppermint oil or 0.3% lemongrass oil due to intermediate tensile strength, intermediate elongation, and also intermediate WVTR; (3.5% starch, 3% glycerol, 0.6% stearic acid) 0.3% peppermint oil or 0.7% lemongrass oil due to WVTR. These combinations were applied to strawberry as edible coating. The edible coating could significantly prolong the shelf life of strawberry fruit, which was up to 5 days at room temperature storage compared to the uncoated strawberry that only had 2 days shelf life and a maximum 40 days at refrigeration temperature compared to control that only had 11 days shelf life. From the analysis, coating combinations significantly affected weight loss, hardness, pH, total sugar, and total plate count when stored in refrigeration temperature.

Keywords: Edible coating, edible film, glycerol, jackfruit seed starch, lemongrass oil, oleic acid, peppermint oil, stearic acid, strawberry.
References: 96 (1978-2016)