

## ABSTRACT

Beef has been a staple food for mankind and its consumption has been in an uptrend throughout the years as it is a common source of protein, while also containing a lot of polyunsaturated fats, high in water content, and other nutrients, all of which are the main cause of beef spoilage, namely, the breakdown of protein, lipid oxidation, and microbial infestation. To extend the shelf life of beef, researchers have put interest into packaging such as edible film because it is sustainable in the long run, able to be incorporated with bioactive compounds and releasing it, and has good physico-mechanical properties, making it a good alternative for fossil-based films. In this study, the top round cut of beef was wrapped with chitosan-gelatin (CG) film incorporated with kesum (*Polygonum minus Huds*) leaves extract (KLE) (2% w/v) and stored in the refrigerator at 4°C for 12 days. It was compared with beef with no film and CG film without KLE. Lipid oxidation test (TBARS assay), microbial plate count, pH, appearance, and Total Volatile Base - Nitrogen were assessed within a 3-day interval. The use of CG edible film had a significant effect on the beef color, turning it dark brown red from bright red. Samples wrapped with CG edible film, both with and without KLE, exhibit the appearance of dried beef. The result showed that the addition of KLE into CG film was effective in reducing lipid oxidation (0.34 mg MDA/kg), protein degradation (8.6 mg N/100 g), microbial growth (total plate count: 3.96 log CFU/g; *E. coli*: 3.92 log CFU/g), which resulted in an extension of beef shelf life for more than 9 days, although on average had no significant differences ( $P < 0.05$ ) against CG edible film without KLE. Future recommendations include the addition of sensory analysis with panelists, peroxide value test, the use of *Longissimus dorsi* cut, and direct comparison with vacuum or modified atmosphere packaging.

**Keywords:** Chitosan-gelatin edible film, round cut beef, Kesum leaf extract, storage test, TBARS, TVB-N.