ANDIARTO YANUARDI. Prediction of the Growth and Survival of *Salmonella* Typhimurium on Shrimps under Cold Storage and Addition of Sodium Metabisulphite. Under direction of HARSID. KUSUMANINGRUM, and SULIANTARI.

This research studied the growth and survival of *S.* Typhimurium on raw shrimps and in brain heart infusion broth (BHIB) under low temperature and addition of sodium metabisulphite which is often used to prevent melanosis in frozen raw shrimps. The data were plotted on growth curves and fitted using DMFit software with Baranyi Model to obtain prediction models of the growth or survival of the bacteria under defined conditions. The result demonstrated that 0.4% and 1.25% sodium metabisulphite (w/v) were able to reduce $10^1$ cfu g$^{-1}$ and $10^2$ cfu g$^{-1}$ of *S.* Typhimurium in raw shrimps, respectively after 7 days storage at $8\pm 2^\circ$C. With a concentration of 1.5%, sodium metabisulphite was able to reduce until $10^5$ cfu g$^{-1}$ after 5 days under the same conditions. Fitting using the DMFit software resulted on different growth rates ($\mu$) and lag phases ($\lambda$), depending on the growth media, temperature, and the initial level of microorganisms. At $8\pm 2^\circ$C without sodium metabisulphite, with initial levels of $10^5$ cfu g$^{-1}$ and $10^5$ cfu ml$^{-1}$, *S.* Typhimurium demonstrated a growth with a rate of $0.01$ cfu g$^{-1}$ every hour in raw shrimps, and $0.05$ cfu ml$^{-1}$ every hour in BHIB. In the presence of 1.5% sodium metabisulphite, *S.* Typhimurium was reduced with a rate of -0.03 cfu g$^{-1}$ every hour in raw shrimps, and -0.01 cfu ml$^{-1}$ every hour in BHIB. There was a good agreement between the predictions and the observations. The Baranyi model can be used to predict the growth of *S.* Typhimurium in BHIB and raw shrimps during storage at low temperature.

Keywords: *Salmonella*, raw shrimp, cold storage, sodium metabisulphite, Baranyi, DMFit