

ABSTRACT

EFFECT OF INLET TEMPERATURE OF SPRAY DRYING ON PHYSICAL CHARACTERISTICS OF *Lactobacillus casei* MICROPARTICLE (in Matrix Combination of Copolymer Methacrylic Acid Type L and Tipe S with Feed Flow Rate 10 ml/minute)

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Drug delivery system is a system that facilitates the drug release in the body and increases its efficacy and safety by controlling time, rate, and site of release of the drug. Controlling the site of release of the drug is achieved by benefiting pH difference of gastric and intestines which is beneficial to *Lactobacillus casei*. *Lactobacillus casei* is a probiotic which function is in the intestine and has low viability in the gastric due to high acidity. To protect *Lactobacillus casei*, a combination of copolymer methacrylic acid type L and type S is used as a matrix which will be the shell of the microparticle. This research aims to examine the effect of inlet temperature (100 °C, 120 °C, 140 °C) on physical characteristics of *Lactobacillus casei* microparticle. The result shows that microparticle produced at 100 °C is bigger than 120 °C and microparticle produced at 120 °C is smaller than 140 °C but statistically no significant difference, also a decrease in moisture content. Morphology observation shows that microparticles produced at 100 °C are spheric but rough and have several cracks on the surface. Meanwhile, microparticles produced at 120 °C and 140 °C have a smooth, deep buckle on the surface and not spheric. FTIR result shows that there is a decrease in wavenumber of –OH group due to their formation to C=O group to form a hydrogen bond. In conclusion, the increase of inlet temperature does not affect particle size, decreases moisture content, and produces smoother yet non-spheric microparticle.

Keywords: Inlet temperature, microparticle, spray drying, *Lactobacillus casei*, particle size, morphology, moisture content