

ABSTRACT

**THE EFFECT OF DIETHYL PHTHALATE
CONCENTRATION ON PHYSICAL
CHARACTERISTICS AND ENCAPSULATION
EFFICIENCY OF *Lactobacillus casei* FNCC 0090 IN
MICROPARTICLE
(Using Methacrylic Acid Copolymer L-type as Matrix)**

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Lactobacillus casei is a probiotic that provide health benefit, plays a role in the immune process, and the natural protection of the disease. Drug delivery system such as microparticle is needed to protect *Lactobacillus casei* from acid condition (gastric) but can release it in alkaline condition (intestine). Methacrylic acid copolymer L-type is used as matrix and combined with diethyl phthalate as plasticizer. The aim of this research is to know the effect of diethyl phthalate concentration (10%, 20%, 30% by weight of methacrylic acid copolymer L-type) to physical characteristics and encapsulation efficiency of *Lactobacillus casei* FNCC 0090 in microparticle with methacrylic acid copolymer L-type as matrix. Microparticle is formed by spray dry method. The microparticle contain diethyl phthalate 10% by the weight of methacrylic acid copolymer L-type shows optimal morphological results (spherical form, no basin, and has a smooth/non-porous microparticle's surface) and also has the smallest moisture content. Particle size is increase with the increasing of diethyl phthalate level. The result of FTIR spectra examination shows a decrease of wavelength number of hydroxyl (-OH) group due to the formation of hydrogen bond on microparticles. Optimum encapsulation efficiency of *Lactobacillus casei* FNCC 0090 is found in the formula with the addition of diethyl phthalate 10% by methacrylic acid copolymer L-type with a percentage of 91.43%.

Keywords: *Lactobacillus casei*, microparticle, methacrylic acid copolymer L-type, diethyl phthalate, spray dry, physical characteristics, encapsulation efficiency