

## ABSTRACT

**CHARACTERIZATION OF NISIN MICROSPHERE USING SODIUM ALGINATE - GELATIN (2.5 : 0.5)% AS MATRIX POLYMER****(Prepared Using Iontropic Gelation Aerosolization Technique)****Garnis Arrum Sekarwati**

The aim of this research is to characterize nisin microsphere were made by ionotropic gelation method aerosolization technique with sodium alginate - gelatine (2.5 : 0.5)% as matrix polymer and calcium chloride 1.5 M as the cross linker. The verification of nisin microsphere was determined using FT-IR and X-Ray Diffraction. The interaction between polymer and nisin was confirmed by the changes in the intensity and wave number on the FT-IR spectra of nisin microsphere. X-Ray Diffraction of nisin microsphere showed amorf characteristic. The evaluation of nisin microsphere was determined by yield value and percent moisture content. Nisin microsphere has yield value 60.81% and has moisture content  $8.90 \pm 0.15(\%)$ . Nisin microsphere is spherical with smooth surface structure as displayed by scanning electron microscope (SEM). Nisin microsphere has mean particle diameter  $5.14 \pm 0.40(\mu\text{m})$ . Mean particle diameter and particle size distribution were determined by *Biological Microscope Model XSZ-107 Series*. Swelling characteristic was determined using gravimetric swelling index procedure and the maximum swelling index is  $1141 \pm 34.58(\%)$  achieved within 5 hr. Entrapment efficiency and drug loading was determined using Spectra/Por® *molecularporous membrane tubing (Dialysis Membrane)* MWCO: 6-4 kD. Assay of nisin was determined using *Spectrophotometer UV 1800 Shimadzu*. Nisin microsphere has entrapment efficiency  $35.64 \pm 0.93 (\%)$  and *drug loading*  $4.50 \pm 0.12(\%)$ .

Keywords: Nisin, Microsphere, Iontropic Gelation, Sodium Alginate, Gelatin, Characterization.