

**ABSTRACT**

*Epigallocatechin gallate (EGCG) is a compound of natural product which have known to have anticancer activity. However, its bioavailability was low of 0.1% limited by poor stability. Many researchs showed that microspheres as drug delivery system was able to improve the stability of drug and protein. EGCG-chitosan microspheres were formed by ionotropic gelation method aerosolization technique.. EGCG-chitosan microspheres were produced from chitosan as polymer and sodium tripolyphosphate as cross linker. This study evaluated effect of 1, 2 and 3% of chitosan concentration with dan without poloxamer 188 on physical characteristics, physical stability and activity of EGCG-Chitosan microspheres.*

*The physical characteristics were evaluated in terms of drug-polymer interaction, particle size and morphology, yield, moisture content, swelling index, mucoadhesif, entrapment efficiency, drug loading. The physical stability were evaluated in partikel size, moisture content, entrapment efficiency and drug loading and the activity of EGCG-Chitosan microspheres as anti cancer services were evaluated with MTT Assay.*

*The smallest particle size is the formula with the smallest concentration of chitosan which is 1% and the highest concentration of poloxamer is 5%, namely the F7 formula with a particle size of 1.76  $\mu\text{m}$ . While the formula that has the biggest entrapment efficiency is the formula F6, in the formula F6 chitosan concentration 3% and poloxamer concentration 188 2.5% with entrapment efficiency of 78.01%. The concentration of chitosan affects the particle size, moisture content, swelling index, mucoadhesive, drug entrapment, and drug loading. The higher the concentration of chitosan the particle size, moisture content, swelling index, mucoadhesive, drug entrapment, and drug loading will be even greater. Whereas poloxamer 188 affects the particle size and moisture content.*

*The stability test was evaluated by measuring particle size, moisture content, entrapment efficiency and drug loading at 25°C and 50°C temperature for storage period of 7, 14, 21 and 30 days. The data revealed that no significant differences for F1-F6 at all temperatures and storage period were found, indicated that the EGCG-chitosan microspheres were stable during storage. The activity test was evaluated by MTT Assay, after an anti-cancer activity test, the F6 formula had the highest anti-cancer activity. The  $IC_{50}$  value in F6 80,98  $\mu\text{g} / \text{mL}$ .*

*Keywords: egcg, chitosan, microspheres, aerosolization, physical characteristics, stability.*