Development of PLGA microsphere of *Cecropia glaziovi* Snethl standardized extract using Response Surface Design (RSD)

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**Keywords:** *Cecropia glaziovi; microsphere*

**Introduction:** *C. glaziovi* used in traditional medicine has hypotensive property. A hydroethanolic extract of *C. glaziovi* prepared with the dried leaves was standardized in terms of its chemical markers, chlorogenic acid and caffeic acid. Microspheres (MCP) have widely been studied as drug carriers in the field of drug delivery system; however, the encapsulation of the hydrophilic drug, like herbal extract, can result in lower encapsulation efficiency (EE). The aim of this study was to improve the EE of the MCP containing extract of *C. glaziovi* using experimental design.

**Experimental part:** PLGA MCP containing *C. glaziovi*-standardized dry extract (SDE) were prepared by the W/O/W emulsion solvent extraction technique. An experimental design (table 1) was used to evaluate the effects of the primary emulsion stirring speed (PESS) and the presence/concentration of NaCl in the external aqueous phase on the encapsulation efficiency (EE) of the SED. The surface morphology of MCP was observed by scanning electron microscopy. The size and particle size distribution were measured by laser granulometry. EE was calculated from concentration of extract associated with the MCP measured by spectrophotometer.

**Results and discussion:** MCP size decreased with the increase in NaCl concentration, independently of the PESS. The span value indicated a narrow particle size distribution. MCP produced without NaCl showed rounded pores on the surface, while the addition of salt formed a dense and homogenous matrix. Furthermore, the EE gradually increased with increasing concentration of NaCl, probably due to balancing of the osmotic pressure.

**Conclusion:** The addition of NaCl modified the properties of the MCP and improved the EE values of SDE.

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*Figure 1: Influence of the primary emulsion stirring speed and concentration of NaCl on the microparticle size (a), span (b) and EE (c)*