

Polymeric particulate system of carboxymethyl chitosan- diterpen lactone fraction of *Andrographis paniculata* nees : Characterization and *in vitro* release study

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Abstract: Objective: The objective of this research was to enhance the dissolution characteristic of diterpene lactone fraction of *Andrographis paniculata* Nees (DTLF) containing 75.9% andrographolide. The effect of carboxymethyl chitosan concentration on physical characteristics, entrapment efficiency and *in vitro* release of diterpene lactone fraction of *Andrographis paniculata* Nees (DTLF) particulate system were investigated.

Methods : Diterpene lactone fraction of *Andrographis paniculata* Nees (DTLF) particulate system with different amount of carboxymethyl chitosan (CMChi) were prepared by ionic gelation followed by spray drying methods with CaCl₂ as cross linker. The particles were evaluated in terms of physical state, drug entrapment efficiency and *in vitro* release rate.

Results : The result showed that DTLF is already entrapped in the system hence the crystallinity reduced. The entrapment efficiency increases with increasing the amount of carboxymethyl chitosan, between 84% up to 90%. The release rate of the particles in 0.5% SLS media were 1.5 times higher than DTL substance, but not significantly different as the polymer amount increased.

Conclusion : Entrapment of DTL in CMChi particulates system could reduce the crystallinity. Hence DTL – CMChi particles were able to enhance release rate of DTL up to 1.5 times.

Keywords: particulate system, carboxymethyl chitosan, diterpene lactone fraction, ionic gelation, spray drying.