

Title : DEVELOPMENT OF CHITOSAN MICROPARTICLE  
CONTAINING ASSUM TEA EXTRACT

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### Abstract

The purpose of the current studies is to develop the method for preparing chitosan microparticles in order to stabilize catechins extracted from Assum tea leaves. Moreover, releasing profile of catechins from chitosan microparticle and their influence parameters were also investigated.

The chitosan microparticle preparation technique was developed using the solvent evaporation method. The oil phase in this study was silicone oil. Small chitosan microparticles of diameter  $1.66 \pm 0.055 \mu\text{m}$  were obtained with 2% of chitosan solution. Furthermore, the size and properties of the chitosan microparticles depended on several parameters such as concentration of Tripolyphosphate, concentration of organic solvent and speed of homogenizer. The encapsulation efficiency of chitosan microparticles was found to depend on the amount of green tea loading and ratio of emulsifier. Five percentages (w/w of chitosan polymer weight) of green tea loading with 5% and 2.5% of emulsifier were the optimum conditions to provide the highest encapsulation efficiency. The releasing behavior of chitosan-green tea microparticles in various pH were different. EGC and EC were released from chitosan microparticles rapidly within 2 hour under acidic condition while EGCG and ECG were released gradually. In neutral condition, only release of ECG and EC occurred. The stability of catechins loaded in chitosan microparticles under various temperatures and pH was various. The optimum pH and

temperature for catechins stability were 5 and 45 °C respectively. Moreover, the degradation of tea catechins was prominent at high temperature and pH. However, the degradation of tea catechins loaded in chitosan microparticles was less than that of free catechins. The photo-stability of chitosan-green tea microparticle was also studied. The catechins in chitosan-green tea microparticles were far more stable than those in both powder and dispersion forms.

In conclusion, the technique for preparing chitosan microparticles containing Assam tea extract was developed. The technique is suitable for micro-encapsulation of hydrophilic compound into chitosan microparticles.

