

ABSTRACT**THE EFFECT OF INCREASING EPIGALLOCATECHIN GALLATE'S
(EGCG) PARTITION COEFFICIENT DUE TO THE ADDITION OF
SURFACTANTS TO THE RELEASE OF EGCG FROM THE
MICROPARTICLE SYSTEM****Diyah Pujiastuti**

Epigallocatechin gallate (EGCG) is a compound derived from green tea (Camellia sinensis) which has been known to have antioxidant activity. However, it has poor characteristics and stability. EGCG has low permeability and high solubility, it's included in the Biopharmaceutics Classification System (BCS) 3. EGCG has a log P of 1.18 and easily oxidized by heat, oxygen, pH, and light. This results lead to low absorption of EGCG into the skin. In order to increase the absorption of EGCG into the skin, an attempt was made to increase the lipophilicity of EGCG by adding surfactants so that the EGCG partition coefficient could approach skin lipophilicity. Whereas, to overcome the low stability of EGCG, many researchs showed that microspheres as drug delivery system was able to improve the stability of drug.

Surfactants which used to increase the EGCG partition coefficient could interact with the polymer on microparticle systems and led to aggregation and decrease of the therapeutic effect of the drug. However, in another research, EGCG with higher partition coefficient showed better penetration into the skin than the other one. This study evaluated the effect of increasing the EGCG partition coefficient due to the addition of surfactants to its release from the microparticle system because the drug release from the matrix is one of the important factor for penetration.

The physical characteristics were evaluated in terms of drug-polymer interaction, particlesize and morphology, yield, swelling index, entrapment efficiency, and Drug Loading. Based on the results of the study, it had significant differences in the entrapment efficiency and Drug Loading. But the release test had the same results between the EGCG-chitosan microspheres whose partitions coefficient were increased with EGCG-chitosan microspheres whose partitions coefficient were not increased. It showed that surfactant didn't cause negative or positive interactions with the release of EGCG from the microparticle system.

Keywords: Epigallocatechin gallate (EGCG), chitosan, microspheres, surfactants, partition coefficient.