

ABSTRACT

*Green tea has many health benefits, namely antioxidants, antimutagenic, anticancer, antibacterial, antiobesity, antihypertension and antidiabetic. This study was aimed to formulate a transdermal matrix patch using green tea leaf extract (*Camellia sinensis* L.) Kuntze.*

Extraction optimization was performed by the factorial design method while optimization of the transdermal matrix patch formula was carried out by the simplex lattice design method. Determination of gallic acid, catechin, caffeine, and epigallocatechin gallate levels in green tea leaf extract, drug release and membrane transport were carried out using the high-performance liquid chromatography method. Determination of drug release kinetics is based on curve fitting analysis using zero order, first order, Higuchi, and Korsmeyer Peppas models. Whereas the determination of the membrane transport kinetics used a compartment-based approach.

The results showed optimal extraction conducted in water temperature: brewing number: brewing time (95°C: 1 time: 20 minutes). While the optimal formula was obtained by a combination of HPMC K100:HPMC K4M:PEG 400 (4.0:4.5:0.5). The drug release kinetics followed the Korsmeyer-Peppas model, while membrane transport can be illustrated by a three compartment model

Keywords: *green tea, patch, epigallocatechin gallate, optimization*