

## INTISARI

Analisis pemodelan kompartemen sediaan topikal seperti kosmetik masih jarang dilakukan. Hal tersebut penting untuk mengetahui mekanisme proses transport senyawa melalui kulit. Oleh karena itu, penelitian ini memanfaatkan data-data publikasi terdahulu sebagai bahan analisis model kompartemen absorpsi perkutan senyawa aktif kosmetik yang dibatasi penggunaannya oleh BPOM, seperti tabir surya yang mengandung oksibenzon. Tujuan penelitian ini yaitu untuk mengetahui pemodelan kompartemen data simulasi absorpsi perkutan senyawa oksibenzon dan DEET (*N,N*-diethyl-*m*-toluamide) pada sediaan losion.

Data simulasi diperoleh berdasar data rata-rata  $\pm$  SD grafik literatur dan diekstraksi menggunakan GetData Graph Digitizer. Data simulasi individual diestimasi menggunakan fungsi *random inverse* pada Microsoft Excel. Metode analisis model kompartemen dilakukan menggunakan perangkat lunak WinSAAM dengan pendekatan *visual goodness of fit*.

Hasil analisis model kompartemen senyawa oksibenzon dan DEET pada sediaan tunggal berturut-turut adalah model 3 kompartemen dan model 4 kompartemen. Yang mana, hasil analisis model kompartemen kedua senyawa dalam sediaan campuran mengikuti model yang sama seperti sediaan tunggalnya. Penelitian ini membuktikan bahwa data simulasi dari artikel terdahulu dapat digunakan sebagai bahan analisis pemodelan kompartemen yang berguna dalam memahami mekanisme transpor senyawa melalui kulit. Namun, dengan catatan bahwa senyawa yang diuji memiliki kelengkapan data sebagai pendukung analisis mekanisme transpor biologis seperti pKa dan koefisien partisi (logP).

**Kata kunci:** model kompartemen, absorpsi perkutan, oksibenzon, DEET, WinSAAM.

### ***ABSTRACT***

Modeling analysis of topical preparations such as cosmetics is still rarely done. It is important to learn the mechanism of a compound transport process through the skin. Therefore, this study utilizes data from previous publications as a model for percutaneous absorption compartment analysis of cosmetic active compounds that are restricted by the National Food and Drug Agency, such as sunscreen containing oxybenzone. The purpose of this study was to determine the modeling of percutaneous absorption simulation data from combined oxybenzone and DEET (N, N-diethyl-m-toluamide) in lotion formulation.

Simulation data were obtained based on the mean  $\pm$  SD of the literature graph and extracted using GetData Graph Digitizer. Then, the individual data were obtained using randomize function in Microsoft Excel. The research method in modeling compartment analysis was performed using WinSAAM software with visual goodness of fit approach.

The results of this compartmental model analysis of oxybenzone and DEET on a single preparation were a three-compartment model and a four-compartment model, respectively. Which, the results of the compartment model analysis of the two compounds in the mixed preparation followed the same model as the single preparation. This study proves that simulation data from previous articles can be used as material for analyzing compartment modeling which is useful in understanding the mechanism of transport of compounds through the skin. However, the note that the compounds tested have complete data to support the analysis of biological transport mechanisms such as pKa and partition coefficient (logP).

**Keywords:** compartment model, percutaneous absorption, oxybenzone, DEET, WinSAAM.