

INTISARI

Penelitian tentang optimasi komposisi sistem gel dan *oleum citronellae* dalam formula gel repelan dengan gelling agent CMC (*carboxymethyl cellulose*) dan gliserol bertujuan untuk menentukan komposisi sistem gel dan oleum citronellae yang optimal dan menentukan apakah terjadi interaksi antara sistem gel dan *oleum citronellae*.

Penelitian ini menggunakan rancangan eksperimental murni yang bersifat eksploratif dengan variabel ganda (desain faktorial). Untuk optimasi formula digunakan desain faktorial dengan kombinasi formula 1, a, b dan ab, dimana tiap formula memiliki kombinasi sistem gel dan *oleum citronellae* berbeda-beda. Optimasi tersebut dilakukan terhadap sistem gel dan *oleum citronellae* dengan parameter sifat fisik gel, stabilitas gel dan daya repelan terhadap nyamuk *Aedes albopictus* supaya didapatkan komposisi gel repelan *oleum citronellae* yang memenuhi persyaratan mutu yaitu, berkhasiat, aman dan dapat diterima oleh masyarakat.

Hasil analisis data menunjukkan bahwa *oleum citronellae* dominan dalam menentukan viskositas dan daya repelan. Untuk sistem gel menjadi faktor dominan dalam menentukan pergeseran viskositas. Daya sebar optimal berkisar 5-6 cm, viskositas optimal berkisar 14-25 d.Pa.S, perubahan viskositas optimal sebesar 15%, sedangkan daya repelan optimal lebih dari 95%. Dari *contour plot super imposed* diperoleh area optimal untuk daya sebar, viskositas, perubahan viskositas dan daya repelan gel yang cenderung pada level tinggi *oleum citronellae* dan level rendah sampai tinggi sistem gel. Area tersebut diperkirakan sebagai komposisi optimal sistem gel dan *oleum citronellae*.

Kata kunci : sistem gel, *oleum citronellae*, gel repelan dan desain faktorial.

ABSTRACT

The study about optimization of gel system and *oleum citronellae* composition in repellent gel formula with gelling agent CMC (carboxymethyl cellulose) and glycerol was aimed to determine optimal composition between gel system and *oleum citronellae* and also to determine whether the interaction between gel system and *oleum citronellae* was occurred.

This study was used explorative pure experimental design with two variables (factorial design). Optimizing the formula used factorial design with formula combination were 1, a, b and ab, where each formula had different combination of gel system and *oleum citronellae*. This optimizing was done toward gel system and *oleum citronellae* using parameter of gel physics properties, gel stability and repellency toward *Aedes albopictus* mosquitoes in order to be got the *oleum citronellae* repellent gel which fulfilled the quality requirements those were effective, save and could be accepted by the community.

Analyses of results showed that *oleum citronellae* was dominant in determining viscosity and repellency. Gel system was dominant in determining viscosity changing. Optimal spreadability lied between 5 until 6 cm. Optimal viscosity lied between 14 d.Pa.S until 25 d.Pa.S. Optimal viscosity changing lied between 15%. Optimal repellency valued over from 95%. Optimal area for spreadability, viscosity, viscosity changing and repellency preferred to be resulted at combination between low and high level of gel system and high level of *oleum citronellae*, based on contour plot super imposed graphic. That area was estimated as an optimal composition between gel system and *oleum citronellae*.

Keywords : gel system, *oleum citronellae*, repellent gel and factorial design