

INTISARI

Nyamuk merupakan vektor penyakit yang berbahaya. Penelitian ini merupakan salah satu usaha untuk memberikan alternatif dan usaha eksplorasi penggunaan bahan alam, yaitu minyak atsiri sereh sebagai repelan (penolak nyamuk). Tujuan dari penelitian ini adalah untuk mendapatkan formula gel repelan minyak atsiri sereh yang memenuhi persyaratan mutu yakni manjur, aman, dan dapat diterima masyarakat. Oleh karena itu dilakukan optimasi formula dan kontrol kualitas gel repelan minyak atsiri sereh.

Penelitian ini menggunakan rancangan eksperimental murni yang bersifat eksploratif dengan variable ganda (desain faktorial 2^2). Subyek uji yang digunakan adalah minyak atsiri sereh kualitas farmasetis sebagai zat aktif formula gel repelan. *Gelling agent* yang digunakan adalah larutan CMC 5% b/v dan polietilenglikol 400. Metode desain faktorial menggunakan kombinasi formula 1, *a*, *b*, dan *ab*. Kombinasi jumlah *gelling agent* tiap formula berbeda. Optimasi tersebut dilakukan terhadap parameter sifat fisis sediaan semipadat dan stabilitas sediaan dalam penyimpanan. Setelah diperoleh formula yang optimum, dilakukan uji iritasi primer pada kulit kelinci albino selama 1 minggu untuk mengetahui keamanan gel repelan dan uji efektivitas gel repelan terhadap nyamuk *Aedes albopictus* betina.

Hasil analisis data menunjukkan bahwa interaksi larutan CMC 5% b/v dan polietilenglikol 400 dominan dalam menentukan daya sebar dan efektivitas gel repelan minyak atsiri sereh, sedangkan larutan CMC 5% b/v dominan dalam menentukan viskositas gel repelan minyak atsiri sereh. Formula gel repelan minyak atsiri sereh bersifat kurang merangsang dalam uji iritasi dengan metode Draize. Berdasarkan *contour plot super imposed* diperoleh area optimum untuk viskositas, stabilitas, dan efektivitas gel repelan. Area tersebut diperkirakan sebagai formula optimum gel repelan pada level yang diteliti.

Kata kunci: minyak atsiri sereh, CMC, polietilenglikol 400, desain faktorial.

ABSTRACT

Mosquitoes are the dangerous disease's vector. This experiment is an effort to give alternative and exploration in using the natural resources, that is citronella oil as the repellent. The aim of the experiment is to get the formula of the repellent gel from citronella oil which has the standard quality, it means the formula will be efficacious, safe, and well accepted by the society. Therefore, the optimization of the formula and the control of the quality of the essential oil is done.

This experiment using the pure experimental method which has the explorative character with the double variables (2^2 design factorial). The subject, was citronella oil with the pharmaceutical quality as the active formula of the repellent gel. As the gelling agent, the writer use 5% of the CMC liquid w/v and polyethylenglycol 400. Design factorial method used the combination of formula 1, *a*, *b*, and *ab*. The combination of gelling agent quantity in each formula were different. The optimization is done to the parameter of characteristic and the stability during storing of repellent gel. After the optimum formula were achieved, primary irritation test at the skin of albino rabbit was done for one week to find out the safety of the repellent gel and effectivity test of repellent gel was done against female *Aedes albopictus* biting.

The result of data analysis show that the interaction of the CMC liquid 5% w/v and polyethylenglycol 400 is dominant in determining the spreadability and effectivity of repellent gel, while CMC liquid 5% w/v is dominant in determining the viscosity repellent gel. Repellent gel formula from citronella oil have the character of less stimulate in primary irritation test with the Draize method. Based on the super imposed contour plot, the optimum area for the viscosity, stability, and effectivity of repellent gel were achieved. That area were estimated as the optimum formula repellent gel in the tested level.

Key word: citronella oil, CMC, polyethylenglycol 400, factorial design