

**FORMULASI DAN EVALUASI FISIK *HYDROGEL PATCH*
ULTRASPHERES® 8041 *UNDER EYE* BERBASIS XANTAN GUM
MENGUNAKAN DESIGN EXPERT DENGAN METODE D-OPTIMAL**

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INTISARI

Latar belakang: Ultraspheres® 8041 merupakan suatu tipe fosfolipid *unsaturated* dengan adanya material raw *non-gmd* kedelai yang dapat terdispersi secara halus dengan vitamin A, C dan E serta fosfatidilkolin kedelai yang berfungsi sebagai pengemulsi tunggal. Ultraspheres® 8041 merupakan produk yang dibuat dengan salah satu sistem penghantar dengan adanya kombinasi dari hidrofilik dan lipofilik aktif. Pengembangan produk kombinasi tiga macam vitamin masih jarang digunakan untuk perawatan kulit yaitu hiperpigmentasi yang disebabkan oleh paparan sinar UV. Dibutuhkan pembaharuan sediaan yaitu *hydrogel patch* untuk sediaan kosmetik.

Tujuan penelitian: mengembangkan formulasi sediaan *hydrogel patch under eye* Ultraspheres® 8041 dengan kandungan vitamin A, C, dan E menggunakan *Design Expert* versi 9.0 dengan metode *D-Optimal* dan evaluasi fisik yang baik serta aktivitas antioksidan.

Metode penelitian: Preparasi penelitian dilakukan dengan melakukan desain optimasi basis *hydrogel patch* menggunakan *Design Expert* versi 9.0 dengan metode *D-Optimal* dan evaluasi fisik. Serta dilakukan uji antioksidan dengan metode DPPH.

Hasil: Formulasi optimum *hydrogel patch under eye* menggunakan Ultraspheres® 8041 1%, xantan gum 0,683%, propilen glikol 10,033%, dan gliserin 1,983%. Hasil dievaluasi fisik *hydrogel patch* melalui pengamatan organoleptis mendapatkan hasil putih jernih, berbau khas, halus, dan elastis serta lengket, nilai pH 4,55, uji ketebalan 0,56, *folding edurance* 300 kali lipatan, dan *loss on drying* 35,42. Hasil aktivitas antioksidan yaitu 917,8081 µg/mL yang artinya aktivitas antioksidan sangat lemah.

Kesimpulan: Didapatkan formula optimum *hydrogel patch* menggunakan *software Design Expert versi 9.0* dengan metode *D-Optimal* dan evaluasi fisik serta uji antioksidan yang baik pada vitamin C dengan aktivitas sangat kuat.

Kata kunci: Ultraspheres® 8041, *Hydrogel Patch*, Xantan gum, *D-Optimal*, Antioksidan

FORMULATION AND PHYSICAL EVALUATION OF HYDROGEL PATCH ULTRASHAPERES® 8041 UNDER EYE BASED ON XANTHAN GUM USING DESIGN EXPERT WITH D-OPTIMAL METHOD

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ABSTRACT

Background: Ultraspheres® 8041 is an unsaturated phospholipid type in the presence of non-GMD soybean raw material which can be finely dispersed with vitamins A, C and E and soy phosphatidylcholine which functions as a single emulsifier. Ultraspheres® 8041 is a product made with one of the delivery systems in the presence of a combination of hydrophilic and lipophilic actives. The development of a combination product of three kinds of vitamins is still rarely used for skin care, namely hyperpigmentation caused by exposure to UV rays. It is necessary to renew the preparation, namely hydrogel patch for cosmetic preparations.

Objective: Developed an Ultraspheres® 8041 hydrogel patch under eye formulation containing vitamins A, C, and E using Design Expert version 9.0 with the D-Optimal method and good physical evaluation and antioxidant activity.

Method: The research preparation was carried out by performing an optimization design of the hydrogel patch base using Design Expert version 9.0 with the D-Optimal method and physical evaluation. As well as the antioxidant test with the DPPH method.

Result: The optimum formulation of the under eye hydrogel patch used Ultraspheres® 8041 1%, xanthan gum 0.683%, propylene glycol 10.033%, and glycerin 1.983%. The results were physically evaluated by hydrogel patch through organoleptic observation to get clear white results, distinctive smell, smooth, elastic and sticky, pH value 4.55, thickness test 0.56, folding edurance 300 times, and loss on drying 35.42. The result of antioxidant activity is 917.8081 g/mL, which means that the antioxidant activity is very weak.

Conclusion: The optimum hydrogel patch formula was obtained using Design Expert software version 9.0 with the D-Optimal method and physical evaluation as well as a good antioxidant test on vitamin C with very strong activity.

Keyword: Ultraspheres® 8041, Hydrogel Patch, Xanthan gum, D-Optimal, Antioxidant