

INTISARI

MARDIANA, L., 2019, OPTIMASI KOMBINASI *CARBOMER* DAN CMC Na DALAM SEDIAAN GEL PEWARNA RAMBUT EKSTRAK BUNGA TELANG (*Clitoria ternatea* L.), TESIS, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA.

Warna rambut ditentukan oleh pigmen melanin. Kekurangan nutrisi dan oksigen mengakibatkan susunan rambut menjadi tidak baik dan mempengaruhi pembentukan melanin rambut sehingga terbentuk rambut uban. Penambahan warna dapat dilakukan untuk menutupi warna rambut yang telah kehilangan pigmen warna aslinya. Faktor zat warna dan pewangi sangat penting dalam sediaan kosmetik pewarna rambut. Antosianin pada Tanaman Bunga Telang (*Clitoria ternatea* L.) berpotensi sebagai zat pewarna alami. Mutu fisik pewarna rambut ditentukan dari kombinasi basis gel *carbomer* dan CMC Na sebagai *gelling agent*. Penelitian ini bertujuan untuk mengetahui pengaruh kombinasi *carbomer* dan CMC Na terhadap Mutu fisik pewarna rambut, mengetahui komposisi formula optimum, stabilitas fisik selama penyimpanan dan pengujian iritasi.

Serbuk kering bunga telang dimaserasi dengan air yang diasamkan dengan asam tartarat menggunakan gelombang ultrasonik hingga didapatkan filtrat hasil penyaringan dengan *vacuum filtrat*. Ekstrak diperoleh dengan metode pengeringan *freeze dry* selama 3 hari. Delapan formula pewarna ekstrak bunga telang dengan variasi basis gel *carbomer* dan CMC Na diuji Mutu fisiknya untuk mendapatkan formula optimum meliputi daya lekat, daya sebar, pH dan viskositas. Formula optimum yang dibuat dilakukan uji stabilitas mutu fisik dengan metode *freeze and thaw* selama 3 siklus dan uji stabilitas warna terhadap lama pewarnaan pada rambut, pencucian serta pengaruh sinar matahari.

Hasil menunjukkan bahwa *carbomer* dominan meningkatkan viskositas, daya lekat dan pH gel sedangkan CMC Na dominan meningkatkan daya sebar gel. Interaksi dari *carbomer* dan CMC Na meningkatkan viskositas, daya lekat, pH dan daya sebar. Formula optimum pewarna rambut bunga telang mengandung *carbomer* sebesar 1,66% dan CMC Na sebesar 6,00%. Tidak ada beda signifikan antara respon percobaan dengan prediksi. Viskositas, daya lekat, daya sebar, dan pH tidak stabil ($p < 0,05$) dianalisa dengan *paired t-test* pada sebelum dan sesudah uji stabilitas selama 3 siklus. Formula optimum pewarna rambut menyebabkan iritasi ringan pada kulit dan merupakan gel yang disukai oleh panelis pada uji hedonik (Tekstur, warna, aroma dan kemudahan pengambilan sediaan).

Kata kunci: Bunga Telang, *Carbomer*, CMC Na, *Factorial Design*, Pewarna Rambut

ABSTRACT

MARDIANA, L., 2019, THE OPTIMIZATION OF THE COMBINATION OF CARBOMER AND CMC Na IN THE PREPARATION OF HAIR DYE GEL FROM THE EXTRACT OF BUTTERFLY PEA FLOWER (*Clitoria ternatea* L.), THESIS, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA.

The color of hair is determined by melanin pigment. The lack of nutrient and oxygen may negatively affect the hair's structure and melanin which results in the growth of gray hair. Color adding may be applied to cover hair that has lost its original color pigment. Color and perfume substance factors are essential in a hair dye preparation. Anthocyanin in Butterfly Pea flower (*Clitoria ternatea* L.) has the potency to act as a natural dye. The physical attributes of hair dye are determined from the combination of *carbomer* gel and CMC Na as the gelling agent. This research aimed to discover the effect of the combination of *carbomer* and CMC Na on the physical attributes of the hair dye and to know the optimal formula composition as well as its physical stability during storage and in irritation test.

Dry powder of the Butterfly Pea flower was macerated in water that was acidified with tartaric acid using ultrasonic wave to obtain the filtering result's filtrate with vacuum filtration. The extract was obtained through freeze dry process for 3 days. Eight Butterfly Pea flowers' extracts with various carbomer and CMC Na compositions were tested for its physical attributes in order to obtain the optimal formula which included adhesiveness, dispersion, pH, and viscosity. To obtain the optimal formula, stability test was conducted on its physical qualities using freeze and thaw method in 3 cycles and another stability test conducted on its dying duration, washing, as well as the sunlight's effect on it.

The result showed that carbomer had dominant effect in improving viscosity, adhesiveness, and pH of the gel; meanwhile CMC Na had dominant effect in increasing the gel's dispersion. The optimal formula for Butterfly Pea flower hair dye contained 1,66% carbomer and 6,00% CMC Na. There were no significant differences between the experiment's response and prediction. Unstable viscosity, adhesiveness, dispersion ($p < 0,05$) was analyzed through paired t-test in both before and after the stability test for 3 cycles. The optimal formula of the hair dye caused light irritation to the skin and the gel was the panelists' favorite during the hedonic test (texture, color, fragrance, and ease of use).

Keywords: Butterfly Pea Flower, *Carbomer*, CMC Na, *Factorial Design*, Hair Dye.