

ABSTRAK

Latar Belakang : Penelitian terdahulu menemukan bahwa Kulit Jeruk Gerga (*Citrus x Aurantium L.*) mengandung senyawa bioaktif seperti flavonoid yang diduga berpotensi sebagai agen fotoprotektif terhadap sinar ultraviolet. Fermentasi menggunakan kultur bakteri SCOBY diharapkan dapat meningkatkan kandungan bioaktif dan aktivitas fotoprotektif dari infusa kulit jeruk gerga. Penelitian ini bertujuan untuk mengevaluasi potensi fermentasi SCOBY infusa kulit Jeruk Gerga (*Citrus x Aurantium L.*) sebagai agen pelindung sinar matahari dengan menentukan nilai Sun Protection Factor (SPF) secara *in vitro* dan *in vivo*.

Metode : Metode yang digunakan pada penelitian ini bersifat ekperimental dimana terdapat 2 kelompok perlakuan yakni kelompok infusa fermentasi SCOBY kulit Jeruk Gerga dan infusa non fermentasi kulit Jeruk Gerga yang kemudian dievaluasi nilai SPF secara *in vitro* menggunakan metode spektrofotometri UV-Vis. Pengujian *in vivo* aktivitas SPF melibatkan hewan percobaan yakni mencit yang dianalisis dalam 4 kelompok perlakuan yakni kontrol positif, kontrol negatif, infusa fermentasi SCOBY kulit jeruk gerga dan infusa non fermentasi kulit Jeruk Gerga.

Hasil : Penelitian menunjukkan bahwa proses fermentasi SCOBY meningkatkan nilai SPF yakni sebesar 38,8349 dalam kategori ultra. Pada uji *in vivo* SPF, infusa fermentasi kulit jeruk gerga memiliki rerata nilai reaksi eritema dan edema lebih kecil dibanding infusa non-fermentasi kulit jeruk gerga yang didukung pula dengan hasil pengujian histopatologi.

Kesimpulan : Proses Fermentasi SCOBY pada infusa kulit Jeruk Gerga dapat meningkatkan nilai SPF atau aktivitas fotoprotektornya terhadap sinar UV.

Kata Kunci : SPF, *Sun Protection Factor*, kulit jeruk gerga, infusa, fermentasi SCOBY, fenol total, flavonoid total.

ABSTRACT

Background : Previous research found that Gerga Orange Peel (*Citrus x Aurantium* L.) contains bioactive compounds such as flavonoids which are thought to have potential as photoprotective agents against ultraviolet light. Fermentation using SCOBY bacterial culture is expected to increase the bioactive content and photoprotective activity of gerga orange peel infusa. This study aims to evaluate the potential of SCOBY fermentation of Gerga Orange peel infusa (*Citrus x Aurantium* L.) as a sun protection agent by determining the Sun Protection Factor (SPF) value *in vitro* and *in vivo*.

Methods : The method used in this study is experimental where there are 2 treatment groups, namely the SCOBY fermented infusa group of Citrus Gerga peel and non-fermented infusa of Citrus Gerga peel which is then evaluated for SPF value *in vitro* using UV-Vis spectrophotometric method. *In vivo* testing of SPF activity involves experimental animals namely mice which are analyzed in 4 treatment groups namely positive control, negative control, fermented SCOBY infusa of Gerga orange peel and non-fermented infusa of Gerga orange peel.

Results : The study showed that the SCOBY fermentation process increased the SPF value by 38.8349 in the ultra category. In the SPF *in vivo* test, fermented infusa of gerga orange peel has a smaller mean reaction value of erythema and edema than non-fermented infusa of gerga orange peel which is also supported by the results of histopathology test.

Conclusion : SCOBY fermentation process on Gerga orange peel infusa can increase the SPF value or its photoprotector activity against UV rays.

Keywords : SPF, Sun Protection Factor, Gerga orange peel, infusa, SCOBY fermentation, total phenols, total flavonoids.