PENGARUH LAMA PEMANASAN MENGGUNAKAN *WATERBATH* TERHADAP KARAKTERISTIK GAMBIR (*Uncaria gambir Roxb.*)

MUHAMMAD SULTHAN
2211123019

FAKULTAS TEKNOLOGI PERTANIAN
UNIVERSITAS ANDALAS
PADANG
2026

Pengaruh Lama Pemanasan Menggunakan *Waterbath* Terhadap Karakteristik Gambir (*Uncaria gambir Roxb*.)

Muhammad Sulthan, Daimon Syukri, Bastian Nova

ABSTRAK

Gambir (*Uncaria gambir* Roxb.) merupakan komoditas khas Sumatera Barat yang kaya akan senyawa polifenol, terutama katekin dan tanin, yang berpotensi sebagai antioksidan alami. Penelitian ini bertujuan untuk mengetahui pengaruh lama pemanasan secara tidak langsung menggunakan *water bath* terhadap karakteristik kimia gambir, khususnya peningkatan kadar tanin. Penelitian menggunakan Rancangan Acak Lengkap (RAL) dengan empat perlakuan lama pemanasan, yaitu tanpa pemanasan (0 menit), 120 menit, 240 menit, dan 360 menit pada suhu 70 °C. Parameter yang dianalisis meliputi kadar air, kadar abu, viskositas, warna, kadar tanin, total fenol, aktivitas antioksidan, pH, dan *Fourier Transform Infrared Spectroscopy* (FTIR). Data dianalisis menggunakan analisis ragam (ANOVA) pada taraf nyata 5 % dan dilanjutkan dengan uji DNMRT. Hasil penelitian menunjukkan bahwa lama pemanasan berpengaruh nyata ($p<0,05$) terhadap kadar tanin, total fenol, aktivitas antioksidan, dan pH gambir. Perlakuan pemanasan selama 240 menit menghasilkan karakteristik terbaik dengan kadar air sebesar 4,92 %, kadar abu 3,39 %, kadar tanin 35,89 %, total fenol 255,21 mg GAE/g, aktivitas antioksidan 88,02 % pada konsentrasi 1000 ppm, pH 4,30, dan viskositas 3,09 mPas. Pemanasan 360 menit menyebabkan penurunan kadar tanin, total fenol, dan aktivitas antioksidan akibat degradasi senyawa fenolik. Hasil analisis FTIR menunjukkan keberadaan gugus hidroksil (–OH), karbonil (C=O), aromatik (C=C), dan C–O yang mengindikasikan senyawa fenolik pada seluruh perlakuan. Berdasarkan hasil penelitian dapat disimpulkan bahwa pemanasan menggunakan *water bath* pada suhu 70 °C selama 240 menit merupakan waktu optimum untuk meningkatkan kadar tanin gambir.

Kata kunci: gambir, *waterbath*, tanin, total fenol, antioksidan

The Effect of Heating Time Using a Water Bath on the Characteristics of Gambier (Uncaria gambir Roxb.)

Muhammad Sulthan, Daimon Syukri, Bastian Nova

ABSTRACT

***Gambir (Uncaria gambir* Roxb.) is a specialty commodity from West Sumatra that is rich in polyphenolic compounds, particularly catechins and tannins, which exhibit considerable potential as natural antioxidants. This study aimed to evaluate the effect of indirect heating duration using a water bath on the chemical characteristics of gambir, with a particular focus on increasing its tannin content. A Completely Randomized Design (CRD) was employed with four heating duration treatments: 0 minutes (without heating), 120 minutes, 240 minutes, and 360 minutes at 70 °C. The parameters analyzed included moisture content, ash content, viscosity, color, tannin content, total phenolic content, antioxidant activity, pH, and Fourier Transform Infrared Spectroscopy (FTIR) profiles. The data were analyzed using Analysis of Variance (ANOVA) at a 5 % significance level, followed by Duncan's New Multiple Range Test (DNMRT). The results demonstrated that heating duration significantly affected ($p < 0.05$) the tannin content, total phenolic content, antioxidant activity, and pH of gambir. The 240-minute heating treatment produced the most favorable characteristics, with a moisture content of 4.92 %, ash content of 3.39 %, tannin content of 35.89 %, total phenolic content of 255.21 mg GAE/g, antioxidant activity of 88.02 % at a concentration of 1000 ppm, pH of 4.30, and a viscosity of 3.09 mPas. In contrast, heating for 360 minutes resulted in a decline in tannin content, total phenolic content, and antioxidant activity, indicating the degradation of phenolic compounds due to prolonged heating. FTIR analysis confirmed the presence of hydroxyl (–OH), carbonyl (C=O), aromatic (C=C), and C–O functional groups in all treatments, indicating the persistence of phenolic compounds throughout the heating process. In conclusion, indirect heating using a water bath at 70 °C for 240 minutes is the optimum treatment for enhancing the tannin content of gambir while maintaining its overall chemical quality.**

Keywords: gambir, waterbath, tannin, total phenol, antioxidant.