

Eksplorasi molekul penanda propolis indonesia untuk antiinflamasi = Exploration of indonesian propolis biomarker as anti inflammatory agents

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Abstrak

Obat antiinflamasi didefinisikan sebagai golongan obat yang memiliki aktivitas menekan atau mengurangi peradangan, terutama obat antiinflamasi non steroid. Salah satu efek samping dari obat antiinflamasi non steroid adalah menyebabkan penyakit tukak lambung. Penyakit tukak lambung yang disebabkan oleh obat antiinflamasi dapat diobati dengan propolis. Di samping memiliki sifat anti tukak lambung, beberapa penelitian luar negeri mengatakan bahwa propolis memiliki efek antiinflamasi. Tujuan dari penelitian ini adalah mengidentifikasi sifat antiinflamasi propolis lokal, beserta molekul penandanya. Propolis yang digunakan dalam penelitian ini adalah propolis lebah tak bersengat dari daerah Sulawesi Selatan yaitu *Tetragonula sp*, dengan spesifikasi propolis padatan dan karang. Penelitian mengenai efek antiinflamasi dari propolis menggunakan metode in vivo dengan hewan uji tikus jantan sprague dawley. Metode ini menggunakan karagenan sebagai zat penginduksi inflamasi dan natrium diklofenak 135 mg/kg sebagai kontrol positif.

Dosis yang akan diberikan adalah 50 mg/kg, 100 mg/kg, dan 200 mg/kg untuk propolis padatan, serta 25 mg/kg, 50 mg/kg, dan 100 mg/kg untuk propolis karang. Data diolah dengan statistik ANOVA satu arah dan Kruskal Wallis, dengan program SPSS 23.0. Hasil dari pengukuran sampel dengan metode LC-MS didapatkan grafik kromatogram dan spektra massa yang datanya diolah menggunakan program MassLynx 4.1. Hasil penelitian menunjukkan propolis padatan dengan dosis 50 mg/kg memiliki daya antiinflamasi yang paling baik sebesar 61,81, yang disusul dengan propolis karang dosis 25 mg/kg dengan daya antiinflamasi 58,12. Dengan metode LC-MS/MS, berhasil diidentifikasi 7 senyawa yang memiliki potensi sebagai molekul penanda antiinflamasi pada propolis padatan dan karang. Senyawa [6]-dehidrogingerdion, alfa-tokoferol suksinat, adipiperforin, 6-epiangustifolin ditemukan pada kedua propolis. Senyawa deoksi podofilotoksin dan kurarinon ditemukan pada propolis padatan, serta xantoxiletin ditemukan pada propolis karang.

.....Antiinflammatory drug are types of drug that have abilities to inhibit or reduced an inflammation, especially Non Steroidal Antiinflammatory Drugs NSAID. One of side effect of using the non steroid type is causing ulcerogenic disease. Ulcerogenic disease that caused by the antiinflammatory drug can be cured by propolis. Beside having an ability to cure ulcerogenic disease, propolis have the ability to cure an inflammation according to some international studies. The research main purpose are to identify antiinflammatory properties of Indonesian propolis and also the biomarkers. The propolis that used in this research were the one from stingless bee that can be found in South Sulawesi, Indonesia, which was *Tetragonula sp* and 2 types of propolis that used were smooth and rough propolis. The method that used to identify propolis anti inflammatory properties was in vivo method with sprague dawley white rat as the tested animal. In this method, inflammation was induced by carrageenan and 135 mg kg diclofenac sodium was used as positive control.

Dose of propolis that used in this research were 50 mg kg, 100 mg kg, 200 mg kg for smooth propolis and

25 mg kg, 50 mg kg, 100 mg kg for rough propolis. The measurement data was analyzed with One Way ANOVA and Kruskal Wallis statistical test in SPSS 23.0. After that, to identify anti-inflammatory molecule markers in Propolis, LC MS MS method was used. From LC MS MS, chromatogram graphs and mass spectra of the compounds would be obtained. The results of this method were analyzed by MassLynx 4.1 program. The results from this research indicated that smooth propolis with a dose of 50 mg kg had the best inflammatory inhibition and the value was 61,81. In addition, rough propolis with a dose of 25 mg kg was the best dose after soft propolis with a dose of 50 mg kg and the value was 58,12. Therefore, based on these results, both propolis had an anti-inflammatory effect. Moreover, if soft and rough propolis were compared at the same dose, soft propolis had more significant inflammatory inhibition than rough propolis. From LC MS MS results, 7 anti-inflammatory compounds were identified as potential anti-inflammatory biomarkers in propolis. 6 dehydrogingerdione, alpha-tocopherol succinate, adhyperforin, and 6 epiangustifolin were identified in smooth and rough propolis. Deoxypodophyllotoxin and kurarinone were identified in smooth propolis. Meanwhile, xanthoxyletin was identified in rough propolis.