

## ABSTRAK

**TITA NOVARINI, 2022, UJI AKTIVITAS ENZIM SUPEROKSIDA DISMUTASE (SOD) DALAM EKSTRAK TEMU HITAM (*Curcuma aeruginosa* Roxb.) DENGAN METODE WATER SOLUBLE TETRAZOLIUM SALT-1 (WST-1), SKRIPSI, PROGRAM STUDI S1 FARMASI, FAKULTAS FARMASI, UNIVERSITAS SETIA BUDI, SURAKARTA. Dibimbing oleh Dr. Ana Indrayati, M.Si. dan Desi Purwaningsih, M.Si.**

*Reactive Oxygen Species* (ROS) merupakan radikal bebas yang berperan penting dalam proses fisiologis dalam tubuh, tetapi apabila jumlahnya berlebih dapat menyebabkan stres oksidatif. ROS dapat dihilangkan dengan adanya antioksidan endogen, seperti enzim SOD. Enzim SOD merupakan enzim yang mengkatalisis radikal anion superoksida menjadi turunan oksigen, tetapi bukan radikal bebas. Salah satu tanaman yang memiliki aktivitas SOD adalah temu hitam (*Curcuma aeruginosa* Roxb). Penelitian ini bertujuan untuk mengetahui kadar protein total dan persen inhibisi ekstrak kasar SOD temu hitam pada konsentrasi presipitasi amonium sulfat 25, 50, 75, 100% serta mengetahui persen inhibisi dari konsentrasi presipitasi amonium sulfat yang optimum.

Penelitian ini diawali dengan determinasi tanaman dan pengambilan sampel temu hitam. Ekstraksi enzim SOD dilakukan dengan cara penambahan PBS dan disentrifugasi. Pemurnian enzim SOD dilakukan dengan metode presipitasi amonium sulfat. Penetapan kadar protein total dengan menggunakan metode *Lowry*. Pengukuran aktivitas SOD dilakukan dengan pengukuran nilai persen inhibisi menggunakan *Superoksida Dismutase Activity Assay Kit* WST-1.

Hasil penelitian menunjukkan bahwa kadar protein total ekstrak kasar dan presipitasi amonium sulfat 25, 50, 75, serta 100% secara berturut-turut nilainya sebesar 0,909; 0,639; 0,710; 0,752; dan 0,944 mg/mL. Kemudian nilai persen inhibisinya secara berturut-turut adalah 76,720; 23,810; 65,079; 70,370; dan 83,069% dengan konsentrasi yang optimum adalah konsentrasi 100%.

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Kata kunci : *Curcuma aeruginosa* Roxb., SOD, WST-1.

## **ABSTRACT**

**TITA NOVARINI, 2022, ACTIVITY ASSAY OF SUPEROXIDE DISMUTASE (SOD) ENZYME IN THE EXTRACT OF TEMU HITAM (*Curcuma aeruginosa* Roxb.) WITH WATER SOLUBLE TETRAZOLIUM SALT-1 (WST-1) METHOD, THESIS, BACHELOR OF PHARMACY, FACULTY OF PHARMACY, SETIA BUDI UNIVERSITY, SURAKARTA. Supervised by Dr. Ana Indrayati, M.Si. and Desi Purwaningsih, M.Si.**

Reactive oxygen species (ROS) are free radicals that play an important role in physiological processes in the body, but if the amount is too high, it can cause oxidative stress. ROS can be eliminated in the presence of endogenous antioxidants such as SOD enzymes. SOD is an enzyme that catalyzes superoxide anion radicals into oxygen derivatives, but not into free radicals. One of the herbs with SOD activity is temu hitam (*Curcuma aeruginosa* Roxb). This study aims to determine the total protein content and the percentage inhibition of crude temu hitam SOD extract at an ammonium sulfate precipitation concentration of 25, 50, 75, 100% and determine the percentage of inhibition of the optimal concentration of ammonium sulfate precipitation.

This research begins with the determination of plants and the taking of temu hitam samples. The extraction of the SOD enzyme was performed by adding PBS and centrifuging. The purification of the SOD enzyme was carried out by the ammonium sulfate precipitation method. Determination of the total protein content by the Lowry method. Measurement of SOD activity was performed by measuring the percentage inhibition value using the *Superoxide Dismutase Activity Assay Kit* WST-1.

The results showed that the total protein content of the crude extract and the precipitation of ammonium sulfate were 25, 50, 75 and 100% 0.909, respectively; 0.639; 0.710; 0.752; and 0.944 mg/ mL. Then the percent inhibition values were 76,720, respectively; 23,810; 65,079; 70,370; and 83.069%, the optimum concentration being a concentration of 100%.

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Kata kunci : *Curcuma aeruginosa* Roxb., SOD, WST-1.