

# THE ISOLATION OF CURCUMINOID FROM TEMULAWAK (*CURCUMA XANTHORRHIZA*) RHIZOME AND TEST ITS ACTIVITIES AS ANTIOXIDANT AND ANTI BACTERIAL

by Nurfina Aznam; Sri Atun; Retno Arianingrum; Senam; Bian Ihda An Naila; Astuti Lestari

## ABSTRACT

Temulawak (*Curcuma xanthorrhiza* Roxb) is one of the plants belonging to the family Zingiberaceae. Several studies on the pharmacological effects of curcuminoid compounds that have been found from the Zingiberaceae family plant show antioxidant activity, anti-inflammatory, anticarcinogen, antiviral, and antihepatotoxic properties. The purpose of this study was to determine the curcuminoid that can be extracted from temulawak rhizome, determine the composition of phenolic compounds, determine the antioxidant activity and determine the antibacterial activity of curcuminoid extract from temulawak rhizome. As much as 1 kg of temulawak powder is then macerated with ethanol for 24 hours at room temperature while stirring occasionally. The filtrate is separated and the residue is macerated again for 2 repetitions. The filtrate obtained was collected and concentrated using a vacuum evaporator, so that the ethanol extract was obtained. The temulawak ethanol extract was further fractionated with *n*-hexane to remove the essential oil content and other lipid and non-polar components. Then the extract was partitioned with chloroform to take the curcuminoid component which was yellow to orange. The curcuminoid fraction is dried under vacuum and identifies its components. Analysis of total phenolic levels was carried out by spectroscopic methods. Analysis of the curcuminoid component was carried out by thin layer qualitative and quantitative chromatography. Qualitatively by comparing separate components with R<sub>f</sub> standard compound (dimethoxycurcumin), while quantitatively with TLC Scanner. Antioxidant activity test using DPPH (2,2-diphenilpicrilhidrazine) method, while antibacterial activity test using pathogenic bacterial culture, namely *Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 11229, *Streptococcus mutans* and *Staphylococcus epidermidis* FNCC 0048, by agar diffusion Kirby Bauer Test method. Samples were incubated for 12 hours then observed and measured the formed inhibition zone. The results showed that the curcuminoid extract yield was 10.06% with dimethylcurcumin content of 20.97%. The total phenolic content of curcuminoid extract was  $745.45 \pm 18.5$  mg GA/g extract. The antioxidant activity of curcuminoid extract showed very active activity with IC<sub>50</sub> 24.98 µg / ml. Antibacterial activity of the four pathogenic bacteria showed medium activity.

Kata Kunci: *Temulawak; curcuminoid; antioxidants; antibacterial*