

**ANTIOXIDANT AND
ANTIBACTERIAL PROPERTIES OF
LEAVES AND RHIZOMES OF
ALPINIA GALANGA (LENGKUAS)**

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2011

ABSTRACT

Plants of *Alpinia galanga* (lengkuas) are ginger plants that are widely cultivated for their rhizomes which are commonly used as food, condiment and medicine. In this study, the antioxidant and antibacterial properties of leaves and rhizomes of *A. galanga* were investigated. The objectives were to compare the antioxidant and antibacterial properties of leaves and rhizomes of *A. galanga* and to determine the role of polymeric tannins and non-polymeric phenolic compounds in their antioxidant and antibacterial activities. Antioxidant properties (AOP) were based on total phenolic content (TPC) and 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity expressed as ascorbic acid equivalent antioxidant capacity (AEAC). Antibacterial properties were assessed using the disc-diffusion method with minimum inhibition dose (MID) determined. The antibacterial activity of extracts was also tested by adding ethylenediamine tetraacetic acid (EDTA) to the agar. Extracts of leaves and rhizomes of *A. galanga* were fractionated using Sephadex LH-20 column chromatography. The role of fractionated polymeric tannins and non-polymeric phenolic compounds in their antioxidant and antibacterial activities was evaluated. Much higher percentage yield of non-polymeric phenolic compounds than polymeric tannins was found in leaves and rhizomes of *A. galanga*, suggesting that the former were the major components. TPC and AEAC values of crude extracts of leaves were significantly higher than and comparable to rhizomes, respectively. Highest TPC and AEAC values were observed in polymeric tannin fraction of *A. galanga* rhizomes. Leaf extracts and fractions of *A. galanga* did not show any antibacterial activity against *Staphylococcus aureus*, *Micrococcus luteus* and *Bacillus cereus*. All leaf and rhizome extracts and fractions of *A. galanga* had no inhibitory effect on *M. luteus* and *S. aureus*, respectively. With the addition of 0.01 and 0.1 mg/ml of EDTA, extracts and fractions of *A. galanga* showed moderate response.