ABSTRACT

PAINI SRI WIDYAWATI 2011. Antioxidant activity of Pluchea indica Less leaves methanolic extract and its fraction and their capacity to inhibit cooked duck meat warmed over flavor. Under direction of C. HANNY WIJAYA, PENI SUPRAPTI HARDJOSWORO, and DONDIN SAJUTHI.

*Pluchea indica Less* is a herb commonly used as food and traditional medicine. Its leaves have antioxidant activity due to its various phytochemical compounds. The antioxidant activity of methanolic extract of *Pluchea* leaves to prevent cooked duck meat warmed over flavor (WOF) is still under explored. The objective of this study was to investigate the antioxidant activity of methanolic extract of *Pluchea* leaves and its fraction (ethyl acetate, water, and n-butanol) by using different analysis approaches test systems (2,2-phenyl-1-picrylhydrazyl (DPPH), superoxide and hydroxyl radical-scavenging activities, hydrogen peroxide scavenging activity, ferric reducing power, iron chelating capacity, and β-carotene-linoleic acid bleaching assay). Furthermore, their application as inhibitor to cooked duck meat WOF has also been conducted. Antioxidant activity of *Pluchea* leaves was obtained by dividing its leaves into 3 groups, i.e 1-3, 4-6 and >6. The methanolic extract of those groups contained phytochemical compounds, such as tannin, sterol, phenol hydroquinone, and flavonoid. The methanolic extract of 1-6 *Pluchea* leaves (EMB) had more potential source of DPPH free radical scavenging activity. In addition, this extract was fractionated by various solvents with different polarity, such as ethyl acetate, n-butanol, and water. The result showed that ethyl acetate fraction (FEA) had higher antioxidant activity than EMB and the other fraction, but its activity was lower than methanolic extract of green tea (EMT). The antioxidant activity assay of EMB and FEA was compared to BHT and α-tocopherol by using different analysis approaches test systems. It showed that FEA had superoxide radical-scavenging activity, iron chelating capacity and ferric reducing power, while EMB had superoxide radical-scavenging activity, ferric reducing power and β-carotene–linoleic acid bleaching assay. FEA at 250 ppm concentration was more effective to prevent the formation of cooked duck meat WOF than FEA at 600 ppm concentration and EMB. This fraction significantly inhibited the oxidation of PUFA (linoleic and arachidonic acids) and the formation of malondialdehyde (MDA) and hexanal content. In comparison with FEA, EMB showed less potent antioxidant activity. However, the volatile compounds in EMB extract had an effect in improving sensory properties of duck meat, mainly by increased hedonic-preference scores on acceptance sensory test and also suppressed green and grassy aromatic intensities of duck meat during cooking and storage.

Keywords: antioxidant, Pluchea indica Less, warmed over flavor (WOF), duck meat.