ABSTRACT

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STUDY OF ANTIOXIDANT ACTIVITY OF SMALL YELLOW GINGER (Zingiber officinale Roxb.) AND RED GINGER (Zingiber officinale Roxb. var. rubrum Theilade) WITH HEAT TREATMENT
(xiv + 129 pages : 6 tables, 20 figures, and 7 appendices)

Gingers show potential benefits, as they possess antioxidant activity. Different type of heat treatment and time of heating towards antioxidant activity of ginger were studied. The type of thermal processing in this experiment are roasting, boiling in acidic, and boiling in alkali conditions. Time of heating process used in this experiment are 5 minutes, 6 minutes, and 7 minutes. These treatments were applied on small yellow ginger (Zingiber officinale Roxb.), i.e. jahe emprit (Indonesian), and red ginger (Zingiber officinale Roxb. var. rubrum Theilade), i.e. jahe merah (Indonesian). The result show that boiling in acidic condition for 5 minutes gave the best effect in antioxidant quality for both ginger. IC$_{50}$ value of yellow ginger extract treated with boiling in acidic condition for 5 minutes was $74.451 \pm 1.720$ mg/L and total phenolic content of $172.997 \pm 1.979$ mg GAE/g extract. IC$_{50}$ value of red ginger extract treated with similar treatment was $53.545 \pm 1.064$ mg/L and the total phenolic content of $125.933 \pm 2.166$ mg GAE/g extract. The result of GC-MS analysis showed presence of shogaol and zingiberene compound was found on both ginger extract.

Keywords: antioxidant, IC$_{50}$, small yellow ginger extract, red ginger extract