Abstract

Litsea oppositifolia is one of the species found in Indonesia and its pharmacological effects have not been well studied. Therefore, the antioxidant activity of *L. oppositifolia* stem extract was evaluated in human keratinocytes (HacaT cells) under H_2O_2-induced oxidative stress through related gene expression. The ethanol stem extract of *L. oppositifolia* was screened initially for its antioxidant capacity through the DPPH assay. The result showed that the IC_{50} of the DPPH value was 48.66 ppm ± 3.97 ppm, indicating a powerful antioxidant activity of the plant extract. An MTS assay was then performed to evaluate cytotoxic effects and cytoprotective abilities of the plant extract and ascorbic acid used as a standard. The outcome results showed that *L. oppositifolia* stem extract possessed lower toxicity compared to ascorbic acid. Pretreatment with *L. oppositifolia* stem extract was also found to protect HaCaT cells from H_2O_2-triggered injury. Due to its valuable antioxidant activity, *L. oppositifolia* stem extract may have the potential to enhance enzymatic antioxidant activities (e.g., SOD-2 and GPX-1) in HaCaT cells. However, *L. oppositifolia* stem extract was unable to upregulate SOD-2 and GPX-1 expression. These results suggested that the protective effect of oxidative stress is primarily from its radical scavenging activity and not due to its activity at the molecular level that affects the upregulation of intrinsic antioxidants or radical scavenging-related genes.

Keywords: antioxidant, H_2O_2, gene expression, *Litsea oppositifolia* stem extract