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Antioxidant Activity on Ethanol Extract from *Hizikia fusiformis*

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Hizikia fusiformis(HF) is well known edible brown seaweed both in Korea and Japan. In this study, effects of *Hizikia fusiformis* extract on antioxidant activity was investigated for confirming its health benefits. The HF extract(EHF) was prepared by 80% ethanol extraction and obtained 5.23g/100g HF. Total polyphenol and flavonoid content of EHF showed 47.82± 0.36 and 52.57± 0.71g/100g, respectively. The free radical scavenging ability against DPPH(1,1-diphenyl-2-picrylhydroxyl), authentic SOD-like(superoxide dismutase-like) activity and reducing power, Hydrogen peroxide, linoleic acid were measured as indices antioxidant activity. EHF showed the potent DPPH radical and SOD-like, Hydrogen peroxide, showing 93.10 and 78.46, 93.00% at final concentration of 100mg/ml, respectively. The reducing power and linoleic acid increased with the increasing amount of EHF(final concentration of 1, 10, 100mg/ml). These results suggested that EHF could be a natural antioxidative source containing antioxidative components.

Key words: Antioxidant, *Hizikia fusiformis*, DPPH, SOD-like activity, reducing power

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Ethyl Acetate Extracts of *Hizikia fusiforme* Accelerates TRAIL-Mediated Apoptosis in Human Gastric Cancer AGS Cells

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TNF-related apoptosis-inducing ligand (TRAIL) induces apoptosis in many transformed cells, however, not all human tumors respond to TRAIL, a number of cancerous cell types are resistant to TRAIL cytotoxicity, limiting its application in cancer therapy. In this study, we examined that combination treatment of ethyl acetate extracts of *Hizikia fusiforme* (EHF) and TRAIL led to synergistic apoptosis induction in human gastric cancer AGS cells. Combined treatment with EHF and TRAIL induced synergistic apoptosis of AGS cells as evaluated by observation of condensed and fragmented nuclei in co-treated cells. We performed the effects of combined treatment with EHF and TRAIL on the cell proliferation and viability, the morphological change, the effects on expression of apoptosis gene products. Combined treatment decreased the levels of antiapoptotic proteins including IAP family proteins (cIAP and XIAP) and Bcl-2 members (Bcl-2 and Bcl-XL), and enhanced the levels of proapoptotic proteins such as Bid and Bax. In addition, activation of caspase 3 and caspase 8, caspase 9 and proteolytic cleavage of PARP (poly (ADP-ribose) polymerase). Our data indicate that combination therapy of TRAIL and ethyl acetate extracts of *Hizikia fusiforme* (EHF) may be an effective strategy for human gastric cancer AGS cells.