An Assessment of Antioxidant and Antimicrobial Activity of Subcritical Water Hydrolysate in Brown Seaweed (Laminaria japonica)

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Seaweed has unexplored bioactive compound, it is well known has antioxidant effects and antimicrobial activities against food pathogenic micro-organisms. The purpose of this study is to determine antioxidant activity and antimicrobial activities of brown seaweed Laminaria japonica produced by subcritical water hydrolysis. Total phenolic content (TPC), total flavonoid content (TFC) and 2, 2-diphenyl-1-picrylhydrazyl (DPPH) will be used for determination of phenolic content and antioxidant capacity of hydrolysate water of L. japonica. The antimicrobial activities of raw and deoiled L. japonica produced by subcritical water extraction will be conducted by agar diffusion method. Antimicrobial test will be made against Escherichia coli, Salmonella typhimurium, Staphylococcus aureus and Bacillus cereus. Deoiled L. japonica collected by supercritical carbon dioxide (SCO2) extraction process. The reaction temperatures for hydrolysis of raw and deoiled L. japonica will be maintained from 200 to 280°C. The reaction pressure will be ranged from 13 to 60 bar and the ratio of material to water for hydrolysis is 1:10 (w/v).