

Characteristics of low molecular weight laminarin prepared by gamma irradiation

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Recently, it has been reported that low molecular weight laminarin had the enhanced biological activities. In this study, laminarin was degraded by gamma irradiation, and the changes in its structure and antioxidant property were investigated. Gel permeation chromatography data showed that the average molecular weight of the irradiated laminarin decreased significantly as the irradiation dose increased. The absorbance at 290 nm from UV spectra was increased depending on the irradiation dose resulting from the formation of carbonyl groups. From the NMR analysis, the ratio of α -1,3- to α -1,6-linkages was not changed, indicating the random scission of chains by gamma irradiation. The antioxidative activities measured by Rancimat test were all increased in the gamma irradiated laminarin depending on the absorbed dose. It was reasoned by the formed carbonyl groups in gamma irradiated laminarin. Therefore, gamma irradiation could be a promising method for preparing low molecular weight laminarin with enhanced biological activities.