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Improved Radical Scavenging Activity of β -Lactoglobulin-xylobiose Modified by the Maillard Reaction

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β -Lactoglobulin (β -LG) was modified and conjugated to xylobiose using the Maillard reaction. The antioxidant activity of the Maillard reaction product, β -LG-xylobiose, was measured *in vitro* and compared to that of conjugated β -LG-lactose. The reaction for 7 days led to conjugated β -LG-xylobiose with a relative molecular mass ranging between 19 and 22 kDa based on SDS-PAGE analysis. It is confirmed that xylobiose bound to β -LG by gas-liquid chromatography. One milligram of conjugated β -LG-xylobiose contains 108 μ g of xylobiose, while the available ϵ -amino group content decreased to 40% after the Maillard reaction. Conjugated β -LG-xylobiose had a higher radical scavenging activity than free β -LG. As the modification by xylobiose had a higher efficiency than the modification by lactose, it is found that xylobiose is a useful oligosaccharide for protein modification. Furthermore, the radical scavenging activity of β -LG was improved by modification with xylobiose.

Key words: β -lactoglobulin, xylobiose, Maillard reaction, modification, radical scavenging activity

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