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Effects of Bittern on Maillard Reaction and Antioxidant Properties of the Maillard Reaction Product

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Summary

To study the beneficial effects of seawater bittern products (nigari) on Maillard reaction and antioxidant properties of the Maillard reaction product (MRP), we used 0.5 M glucose / 0.5 M lysine Maillard reaction model that was incubated at 99 °C for 2 h.

By 5 - 50 % (v/v) of two nigari products, among the eight products, ultraviolet (UV) visual (Vis) ray absorbance was remarkably increased. The two nigari products also increased 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging capacity and ferrous reducing power of the Maillard reaction model. Sodium sulfate and ammonium sulfate (1 mol/L) increased the absorbance and antioxidant activities. On the other hand, magnesium chloride (1 mol/L) decreased Vis ray absorbance and the antioxidant activities.

However, the major mineral content and composition in the nigari products were not correlated with the UV-Vis absorbance and the antioxidant activities in the model. Therefore we think that further study about the effect of minor compounds in nigari products on the Maillard reaction is necessary.