

The differences in general composition, amino acid and protein composition between Formosan sambar deer and New Zealand's red deer velvet antler ⁽¹⁾

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Abstract

The purpose of this study was to establish basic information on the general composition, amino acid and protein composition of Formosan sambar deer velvet antler (FSDVA) and New Zealand's red deer velvet antler (NRDVA), so as to serve as a reference for distinguishing Taiwan and imported velvet antler in the future. FSDVA had higher ash, crude fat and collagen contents, while NRDVA had higher moisture and crude protein contents. Deer antler slices were dried and made into velvet powder, and FSDVA velvet powder was found to have higher calcium, phosphorus, copper, and zinc contents than NRDVA velvet powder, while the total amino acid and iron contents were lower. In terms of amino acid composition, the Gly, Pro and Leu of different velvet antlers showed considerable difference between FSDVA and NRDVA. Different solvents (water or alcohol extraction) and ultrasonic treatment (with or without treatment) were used to extract the protein from deer antler powder dried thorough different ways (heat-dried or freeze-dried) and analyzed by SDS-PAGE electrophoresis. The results showed that under various ultrasonic treatment and drying methods, the protein band of the water-extracted protein of FSDVA was lighter than that of NRDVA at 15 kD. In terms of extraction solvent, water extraction showed more protein bands, which was favorable for the exploration of the effects of various treatments on the protein composition of deer antler powder. The performance of protein bands under different drying methods and ultrasonic treatment showed complex results under the influence of multiple factors, such as velvet antler, drying methods or ultrasonic treatment. The identification of the protein band showed that the protein with a large difference between FSDVA and NRDVA was hemoglobin subunit. In conclusion, FSDVA had higher content of ash, crude fat, collagen, calcium, phosphorus, copper and zinc, but lower content of water, crude protein, total amino acid, and iron. The composition of Gly, Pro and Leu of different velvet antlers were considerably different. The content of hemoglobin subunit (15 kD) varies considerably among different antlers.

Key words: Velvet antler, Formosan sambar deer, New Zealand's red deer, General composition, Amino acid, Protein.

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