ONLINE ISSN : 1881-3984
PRINT ISSN : 1344-6606

Food Science and Technology Research
Vol. 8 (2002) , No. 4 pp.304-310

[PDF (745K)] [References]

The Correlation between Rheological Properties and Characteristic Values of Structure for Steamed Abalone Meat

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(Received: November 26, 2001)
(Accepted: July 17, 2002)

The quantitative correlation between rheological properties and characteristic values of structure for steamed abalone meat was studied. Abalone *Haliotis discus* was steamed in a food steamer for 1 h, 2 h, or 3 h, then cut up and separated it into cross- and vertical sections. Changes and characteristic values were enumerated by image processing and analysis techniques. Rheological properties were determined by stress-relaxation experiments; in raw abalone meat, those properties were mainly correlated with the characteristic values of collagen fibrils. For steamed meat, there was clearly a negative correlation between two of the characteristic structural values: the distance between myofibrils (D_m) and the void area between myofibrils (A_m), and rheological properties. This negative correlation between structural and rheological characteristic values (elastic moduli, relaxation time, and viscosity) has been expressed by logarithmic expressions. The results suggested that rheological properties are quantitatively influenced by the characteristic values of structure.

Keywords: abalone, steam, structure, image processing, rheology

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doi:10.3136/fstr.8.304

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