عنوان مقاله:

Environmental Scanning Electron Microscopy of Raw and Heated Veal Semimembranosus Muscle

محل انتشار:

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خلاصه مقاله:

The environmental scanning electron microscopy (ESEM) is a new development in the field of electron microscopy. In this study ESEM has been used to study the structure of veal semimembranosus muscle. Four treatments, raw (control), conventional heating, domestic and industrial microwave heating, were observed using ESEM. The temperature used in conventional heating was ۱۶۳ ۰C. Frequency applied for microwave heating was ۲۴۵۰ MHz with two wattage levels of ۷۰۰ (domestic microwave) and ۱۲۰۰۰ (industrial microwave). All samples were heated to ۷۰ ۰C internal temperature. Occasional cracks across the individual muscle fiber and shrinkage were present in all images of the structure for heated muscle. Erosion at the edges of muscle fibers was clear and increased with continued heating. A gap between perimysium of each muscle bundle was effected with the domestic microwave samples in cross section. This phenomenon was more apparent in industrial microwave heating and the depth of gap between perimysial collagenous fiber is more than that in domestic microwave heating. More damage was observed in the connective tissue network for conventional heating as compared with microwave heating. Denaturation and distortion of connective tissue caused more damage during longer time of conventional heating. Surface damage in structure of semimembranosus was not observed in either conventional heating or the low powered microwave heating. Rapid increase of heat and penetration of the microwaves, at the ۱۲۰۰۰ wattage level, caused granulation and separation of some parts of the muscle fibers.

کلمات کلیدی:

Environmental scanning electron microscopy, Veal, Semimembranosus Muscle, Microwave heating, Conventional heating