PRODUCTION OF RESTRUCTURED SQUID AND SCALLOPS FROM PROCESSING BY-PRODUCTS AND UNDERUTILIZED SPECIES

by

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ABSTRACT

North Atlantic short-finned squid (*Illex illececbrosus*) is an underutilized species and calico scallops (*Argopecten gibbys*) do not achieved the same market value as Sea scallops due to their small size. North Atlantic short-finned squid have limited consumer acceptability due to their smaller, thinner, and more leathery texture than Atlantic long-finned squid (*Loligo pealei*). The market limitation of calico scallops is derived from their small size compared to other species of scallops available in the marketplace. Thus, restructuring or engineering food technology applied to these species to produce new products will result in more profit to the industry.

Restructured squids were fabricated with heat-set binders according to the following combinations: starch, egg white albumin, fish sarcoplasmic protein, starch and egg white albumin, and starch and fish sarcoplasmic protein at various levels. Increasing the level of starch from 2 to 10% decrease the hardness, cohesiveness, and springiness of restructured squid. 2% egg white albumin improved the hardness and cohesiveness, while 2% fish sarcoplasmic protein improved cohesiveness and springiness of the squid gel. The hardness, cohesiveness, and springiness of starch-based combinations decreased as a function of starch.

Restructured scallops were prepared from cold-set binders: alginate and microbial transglutaminase at the 1% level with different setting times to yield the highest binding strength. At the setting temperature of 5 °C, restructured scallops bound with alginate presented the greatest binding strength at 2 hr setting, while those bound with microbial transglutaminase required 24 hr to reach the maximum binding strength. Although alginate benefits the manufacturer with respect to the shorter setting time, the lower binding strength values may result in a decrease in consumer acceptability.