

## ABSTRACTS

### EXTRACTION AND CHARACTERISTICS OF FLAVOR CONCENTRATE FROM MECHANICALLY RECOVERED CRAB MEAT

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Crab flavor concentrates were prepared by washing commercially produced mechanically recovered (Baader) crab meat with salt water followed by enzyme digestion using chymotrypsin. An increase in salt soluble components occurred with increasing time of digestion, and this fraction appears to level off at around 35 percent by weight of the initial mass within 2 hours of digestion. Dilution of the crab meat with water to 30 percent total solids was necessary to reduce consistency and enhance enzyme activity. Increasing enzyme concentration increased rate of solubilization but not the total conversion. The residue after filtration of the digested material showed small fragments of shell, indicating that this procedure may also be used analytically to determine the effectiveness of the deboning process in preventing shell inclusion in the mechanically recovered meat. The extract after digestion had excellent crab flavor with no bitter aftertaste.

### MONOCLONAL ANTIBODY-BASED ENZYME IMMUNOASSAY OF ROCK SHRIMP

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Rock shrimp-specific monoclonal antibody (4H2-10D3) was applied in ELISA tests to detect and quantitate rock shrimp in various seafood and meat samples. Under the optimized testing conditions for ELISA, the use of this McAb in a blind study correctly differentiated rock shrimp from 23 other seafood and meat samples. Furthermore, the presence of rock shrimp as low as 4.3 ng on the average could be detected in sample mixtures containing various seafood or meat samples. The results indicated this McAb can be used to quantitate rock shrimp in mixture samples.

## **A BIOCHEMICAL METHOD TO DISTINGUISH WILD FROM CULTURED FISH**

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Research is currently underway at the Charleston Laboratory to develop a biochemical method to distinguish wild (poached) from cultured (farmed) fish. The objective is to use fatty acid composition differences to differentiate wild from cultured fish.

Our current research indicates that in addition to linoleic acid (18 : 2n6), differences in the concentrations of other long chain polyunsaturated fatty acids such as; linolenic acid (18 : 3n3), arachidonic acid (20 : 4n6), docosapentaenoic acid (22 : 5n6) and docosahexaenoic acid (22 : 6n3) can also be used to help distinguish wild from cultured fish.

## **PRELIMINARY COMPARISON OF THE EFFECT OF LACTIC ACID VERSUS LACTIC/ACETIC ACID MIXTURE ON THE INHIBITION OF GROWTH AND RESUSCITATION OF LISTERIA MONOCYTOGENES**

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In recent years, the interest in control of *Listeria monocytogenes* has grown because of the frequency of incidence in a wide variety of foods. Lactic acid has shown to offer some control of the organism. Recently, investigators have questioned whether a combination of antimicrobials could be more effective than a single agent. A synergistic interaction has been demonstrated between lactic and acetic acid on the decontamination of beef carcasses. The probable interaction was due to the potentiation of acetic acid by lowering the pH by lactic acid and thus increasing the undissociated fraction. Likewise, vacuum package pork treated with 1 percent acetic/1 percent lactic acid was more effective against aerobic, anaerobic, facultative aerobic bacterium and lactobacilli than just 1 percent acetic acid.

These and other recent studies gave rise to the idea that perhaps a mixture of lactic and acetic acid could be more effective against *Listeria monocytogenes* than lactic acid alone. An *in vitro* study of the effect of treatment of cultures of *Listeria* with lactic, acetic and the mixture examines the expression of the microorganism after frozen storage for three days, 1, 2, 3, and 4 weeks, followed by a period of resuscitation to simulate treatment of foods following processing. The final results are incomplete at this time.

## **QUALITY AND STABILITY OF FRANKFURTERS CONTAINING MINCED FISH WITH RED MEATS**

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Frankfurter samples containing mince, washed mince or surimi from several fish species were prepared at the Charleston Laboratory as part of a cooperative study by NMFS and USDA. An improved analytical procedure developed by the USDA shows that nitrosamine formation in fish and red meat franks cured with nitrite is generally low. Sensory and instrumental evaluations of frankfurters containing pollock or menhaden are reported as a function of minced fish form, concentration, and storage condition.

## **MICROBIOLOGICAL HAZARDS IN SEAFOODS**

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Seafoods are among the foods most often implicated in microbial foodborne disease. This, together with the growing market for these foods, has stimulated an increased concern for seafood safety. The general microflora of seafoods normally consists of non-pathogenic, psychrotrophic spoilage bacteria. However, common and less common pathogenic microorganisms also occasionally contaminate seafoods.

