Crab and Shrimp Cookwater Extract Development

Introduction

As part of an overall strategy to add value to primary shellfish species, Quinlan Brothers Limited, with the support of the Fisheries Diversification Program (FDP) and a Japanese partner, has successfully developed a crab and shrimp liquid extract. The procedure involves boiling the water used for cooking crab and shrimp to evaporate most of the water, allowing only a thick liquid concentrate to remain. The extract is then exported to Japan where it is further processed using drying technologies, producing a powder, and placed in retail packages. The finished product is used in seafood sauce, chowder and salad dressing, and as a flavourant, soup additive, seasoning and colorant, primarily for Asian markets.

Background

Incorporated in 1972, Quinlan Brothers Limited, a Canadian-owned, fish-processing company, has built its reputation on quality consistency and initiatives directed towards full utilization of all components of available seafood raw material. The company continues to reinvest revenues into research and development initiatives in an attempt to utilize 100% of all fish and shellfish purchases.

Quinlan Brothers Limited produces a full line of primary shellfish products in Bay De Verde and Old Perlican, including snow crab and northern shrimp. These species are suitable for the production of the extract for Asia. Existing Japanese buyers provided a ready-to-access market for the new crab and shrimp cookwater product. All that was needed at this point was a technology transfer from Japan and technical support. The FDP would provide the required financial support to put the project together successfully.

This new product line is part of Quinlan Brothers’ overall strategy directed towards value-added products and waste elimination.
Methodology
Quinlan Brothers Limited established a pilot extraction operation. Which reduces the raw material (crab and shrimp cookwater) to 5% of its original volume. This is accomplished by boiling the cookwater at 60 to 65 degrees Celsius under vacuum conditions. The low boiling temperature prevents the liquid from burning and reduces the amount of solid loss in evaporation. The steam emitted from the process is directed towards a condenser, at which point it changes to a liquid and is disposed of in offal drains. The concentrated material remaining in the evaporator tank (5% of original volume) is then drained from the tank into 20-liter plastic pails using filters to collect debris and large solids. Final product inspections are performed to ensure the product is safe and high in quality. Inspection criteria include salt level, pH, odor, color, water activity, brix (percentage of sugar) and bacterial levels. The product is then held in a chill room until container shipment to Japan.

Results
The product requires refinement in some areas including salt, brix and taste levels. The principal benefit of the project is that value is added to existing crab and shrimp waste water after cooking. Reduction in the volume of untreated cooking waste water in local water systems resulted in the reduction of odor.

Conclusion
Production of the new crab and shrimp cookwater extract will continue to be part of Quinlan Brothers’ focus on value-added production. Minor modifications and refinement to the process in raw material cooking and extraction equipment will be ongoing in the 2003 season in order to improve product quality and consistency. Future plans include the production of a fully processed, dry extract for the retail market in Asia.

The project has allowed Quinlan Brothers to position itself as a reliable and high-quality producer of crab and shrimp cookwater extract for Asian markets.