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**FAT EXTRACTION FROM MECHANICALLY DEBONED BEEF WITH VARIOUS
pH AND ALKALIS**

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ABSTRACT

The study showed that meat surimi with a 1.3% fat content could be prepared from mechanically deboned beef. The process used in the laboratory to prepare the meat surimi was a relatively simple process requiring few unit operations, unit operations which are already used for the manufacture of fish surimi. It is therefore expected that the meat industry would have few problems in preparing meat surimi from mechanically deboned beef given the fact that the technology has already been demonstrated for the commercial production of fish surimi. The key processing steps are firstly the preparation of a mechanically deboned slurry with cold water to assist in the centrifugal removal of the "free" fat present in mechanically deboned meat. The centrifugal separation also removes the sarcoplasmic proteins which could be used for the production of meat flavours, soup stock and possibly pharmaceuticals. The second crucial step in the process is a sieving operation of the myofibrillar/collagen slurry to remove the collagen and "bound" fat from the myofibrillar protein. The subsequent collagen free myofibrillar protein could be concentrated by either further centrifugation or by pressing.

The study also showed that most alkali washes had no significant impact on the fat removal efficiencies of the process, with the possible exception of sodium carbonate, compared to the use of fresh, potable water. It was further demonstrated that it was unnecessary to increase the pH of the wash water beyond a pH of 7.0 as no additional fat separation efficiencies were obtained at the higher pH's. The neutral pH requirements of the process would reduce chemical costs, and possibly also limit equipment wear compared to high wash treatments of pH 9.0 advocated by other researchers. The low pH requirements of the process could also be expected to minimise protein damage which can occur, if held for extended periods at the higher pH's of 9.0 or higher.

The present study has only demonstrated the feasibility of producing meat surimi from mechanically deboned beef. Other uses for the sarcoplasmic and collagen fractions should be established and then a financial feasibility of the whole process should be carried out to establish whether the outlined process is commercially feasible.

DEDICATION

This thesis is dedicated to my parents, POE CHENG and JER-JIAHN WU, who cared for me, loved me and educated me for the last **thirty years!**

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