

# Meat Industry Reflects Life Styles

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*Newer methods of processing meats as well as new meat products will become more and more visible as the meat industry adapts to Americans' changing life styles. The fast-food service industry as well as the hotel, restaurant and institutional trade will become an ever more important market for meat products. It is predicted that electrical stimulation, massaging/tumbling, restructured steaks, hot-boning and retort pouch packaging will soon find widespread use.*

The ultimate objective of the meat industry—to provide consumers with a product that offers a high degree of eating satisfaction at a low cost—is an important part of product development.

The meat industry is presently experiencing a modernization phase with more new products and processes being investigated than ever before—all in keeping with the changing life styles in this country. The family is more mobile than ever before, the income of the family is higher than ever before and the housewife is more often than not seeking employment. There are also more unmarried people in their late twenties and thirties. These all lead the trend for more convenience foods and more individual serving packages.

The meat industry's traditional three markets are: (1) the retail store, (2) the hotel, restaurant and institutional trade, and (3) the fast-food service industry. Increased mobility, the increase in the number of working housewives and other social factors have reduced the proportion of meat sold in traditional retail stores and increased the sales of meat products to the hotel, restaurant and institutional trade and the fast-food service industry. In fact, it is estimated that soon one of every two meals may be eaten away from home. And if that's the case, meat and meat product development must be directed at the hotel, restaurant and institutional trade and at the fast-food service industry where the greatest number of meals will be eaten.

The new methods of processing meats are being developed with those factors in mind. Here's a look at some of them.

## Electrical Stimulation

In the meat industry, electrical stimulation can be defined as application of electrical current to a carcass prior to chilling to increase tenderness. Commercial units are presently available that vary voltage and impulses from 100-600 volts at 10-30 impulses per minute, depending upon purpose.

Electrical stimulation to tenderize meat was discovered in the 1740s by Benjamin Franklin who found that meat from turkeys that had been electrically shocked was "uncommonly tender." New Zealanders, in the early 1970s, renewed the interest, but their attempts met with little commercial success. In 1975, Texas A&M University began doing extensive research on electrical stimulation. And some of the more recently discovered advantages include (1) extended retail case-life of meat by one additional day, (2) increased tenderness by 20-36%, (3) increased flavor desirability, (4) reduced energy consumption (less chilling and aging time required), (5) less shrinkage, (6) more accurate grading at an earlier stage, (7) catalytic release of enzymes which speeds the aging process (only half the time is required), (8) reduced cold-shortening of muscle fibers and (9) reduced occurrence of heat-ring. The process also adds a new dimension to marketing which increases consumer interest; several commercial companies now market their product under the name "Tender-shock".

## Massaging and Tumbling

Massaging is defined as the mechanical agitation of meat by paddles that disrupts the internal protein structure of meats. Tumbling refers to the rubbing together of chunks of meat, resulting in a roughened outer protein layer. The meat is placed in the machine, tumbled/massaged for four to eight hours and

then pressed into a square or round form. The process is used extensively in processed pork items and is now being applied to beef cuts. (Cooked and New England ham are made in this manner.) Massaging and tumbling increases water-holding capacity, improves meat color and improves meat bind.

## Restructured Steaks

Restructured steaks, also called flaked and formed steaks, are relatively new to the meat industry and are intended to simulate the eating qualities of an actual steak. The concept of restructured steaks is to increase retail value of meat by using less desirable carcasses and carcass components to make a product that provides satisfactory eating qualities.

In restructuring the meat is frozen and passed through a machine which throws the frozen meat against a series of blades mounted on a stationary head. The frozen meat is thus cut into wafer thin slices. The sliced meat is then formed into a log, frozen, tempered and pressed at 250-400 psi into a shape similar to a rib eye. The pressed log is then refrozen and subsequently cut into steaks.

The hotel, restaurant and institutional trade demands not only consistency in product appearance and quality but also portion control which requires meat cuts to be consistent in appearance, thickness and weight. Traditional steaks vary extensively because of animal variation but restructured steaks can be manufactured to be uniform in most traits, thereby satisfying the need for consistency.

At present, some companies are test marketing frozen restructured steaks with excellent success in the hotel, restaurant and institutional trade but only fair acceptance in the retail store. The dull color resulting from the necessity to sell restructured steaks frozen is one retail disadvantage, as customers are accustomed to buying fresh red beef steaks.

## Hot-Boning

The meat industry is the sixth largest user of energy in this country and reduction in energy utilization may be achieved by hot-boning beef, i.e. fabrication of the carcass as soon after slaughter as possible. Decreasing the cooling time and cooler space necessary to chill the boneless, trimmed meat may decrease energy usage by 33-65%. Cold-shortening of muscle which makes meat tough is a probable result of rapid chilling of hot-boned beef, but electrical stimulation of the carcass before boning may alleviate this problem.

## Packaging

Two purposes of meat packaging are to protect the meat against physical damage, chemical changes and bacterial contamination and to present it to the consumer in the most attractive manner possible. Historically, meat was sent from the packing house to the store in carcass form. Presently, 80% of the beef in this country is being distributed in vacuum packages. In the future, more and more meat is going to be shipped to stores in gaseous atmospheres (80% N<sub>2</sub> + 20% CO<sub>2</sub>), which reduces trim loss and is cheaper than vacuum packaging. Also a possible future method of meat distribution is the use of vacuumized trailers.

Another packaging innovation, the retort pouch, which is made of three materials laminated together, has recently received considerable attention. With this method meat is placed in a retort pouch, then cooked in a retort machine. The product then can be stored on the shelf without refrigeration for up to five years. The convenience of the retort pouch is its most important feature; the consumer merely needs to place the unopened retort pouch in boiling water for three to five minutes, remove from the water, open and place the contents on a plate for serving.

*Information excerpted from METHODS OF PROCESSING MEATS, S.D. Seideman and W.J. Costello, Dept. of Animal Science, South Dakota State University, Brookings.*