

PROCESSING

PROCESSING

- Meat is divided into perishable and processed meat. Perishable consumed immediately while processed have shelf stability
- Processed is not synonymous with preservation, although processed products have some shelf stability
- Processing results in substantial change in natural state.

PROCESSING

Why Process?

- i) Utilize non meat ingredients
- ii) Add value to the product
- iii) Increase product mix and increase market opportunities

Comminution- reduction of the particle size so as to incorporate these into sausage.

PROCESSING

- Comminution results in i). Improved uniformity of product due to particle size, ii) increases tenderness because the subdivision of meat into smaller particles in choppers or cutters
- Blending is the additional mixing of comminuted products. This ensures uniform distribution of ingredients especially of cure and seasonings

PROCESSING

- Emulsification – An emulsion is a mixture of two immiscible liquids, one dispersed into the other. Dispersed phase usually droplets which are distributed in the continuous phase
- Meat emulsions are two phase emulsions with fat forming the dispersed while meat and solubilized proteins form the continuous phase

PROCESSING

- Emulsion preparation – lean meat, ice water, salt, seasonings and cure ingredients added and comminuted
- Brine solubilizes proteins. Fat is added and comminution continues. Reason not to over chop on the fat as this decreases stability
- Emulsion stability is affected by:- i) Fat particle size

PROCESSING

- Fat and meat are comminuted. Fat particle size decreases and its surface area increases. In order to emulsify – coating the fat with solubilized proteins decreases the surface tension. Need more protein solubilized or control the fat size by introducing a chopping order

PROCESSING

- Protein extraction. Pre-rigor meat has a neutral pH. As rigor sets in and pH drops, protein extractability decreases. Meat with high pH has high level of extractable proteins than meat of low pH.
- Type of protein. Myofibrillar proteins are better emulsifiers than sarcoplasmic
- Temperature. Increase in temperature in the emulsion mill is detrimental- causes protein denaturation making them poor emulsifiers

PROCESSING

- Fat tend to melt and difficult to emulsify leading to instability
- Increase in temperature could be beneficial in helping in increasing protein extraction and accelerating cured color development

PROCESSING

Hot processing

- Is the exposure of meat products to temperature of 57-75°C. This temperature kills microorganisms and parasite of interest in meat.
- Heat processing helps to:- i) develop firm set structure. Denaturation and coagulation causes partial dehydration and product firms

PROCESSING

- ii). Fixes the meat color
- iii). Helps to denature endogenous enzymes which may cause deteriorative changes

SMOOKING

- Exposure of meat to wood smoke. Helps to i) impart characteristic color, ii). Flavor and iii) confers preservation effects

PROCESSING

- Wood smoke contains over 2000 compounds. Some of these are important as antioxidants such as phenols, bacteriostatic or bactericidal – formaldehyde
- Smoking done in smoke houses using saw dust. In modern houses smoking and heat treatment occur together.
- Use of liquid smoke from fractional distillation of wood smoke

PROCESSING

- Smoke houses have controlled temperature, humidity and smoke density to prevent weight loss, 5- 10% may occur but increase in temperature causes emulsion breakdown
- Wood smoke has 3,4-benzopyrene known carcinogen

PROCESSING

AIM

- Explain reasons for processing
- Factors affecting emulsion stability
- Effects of heat processing and smoking meat products