**Fermented Food: Meat**

Fermentation process has been widely practiced in the meat industry as a natural and inexpensive method of preparing and preserving meat where a number of intrinsic and extrinsic factors (physical, chemical, biological and microbiological) have to be controlled to obtain high quality product. The most important micro organisms involved in this process that accelerate the biological phenomenon by the production of acid, H2O2 and bacteriocins and prevent the growth of food-borne harmful pathogens are mainly the Lactic acid bacteria (LAB), *Lactobacillus*, *Staphylococcus* and *Micrococcus*, and certain types of yeasts and molds.

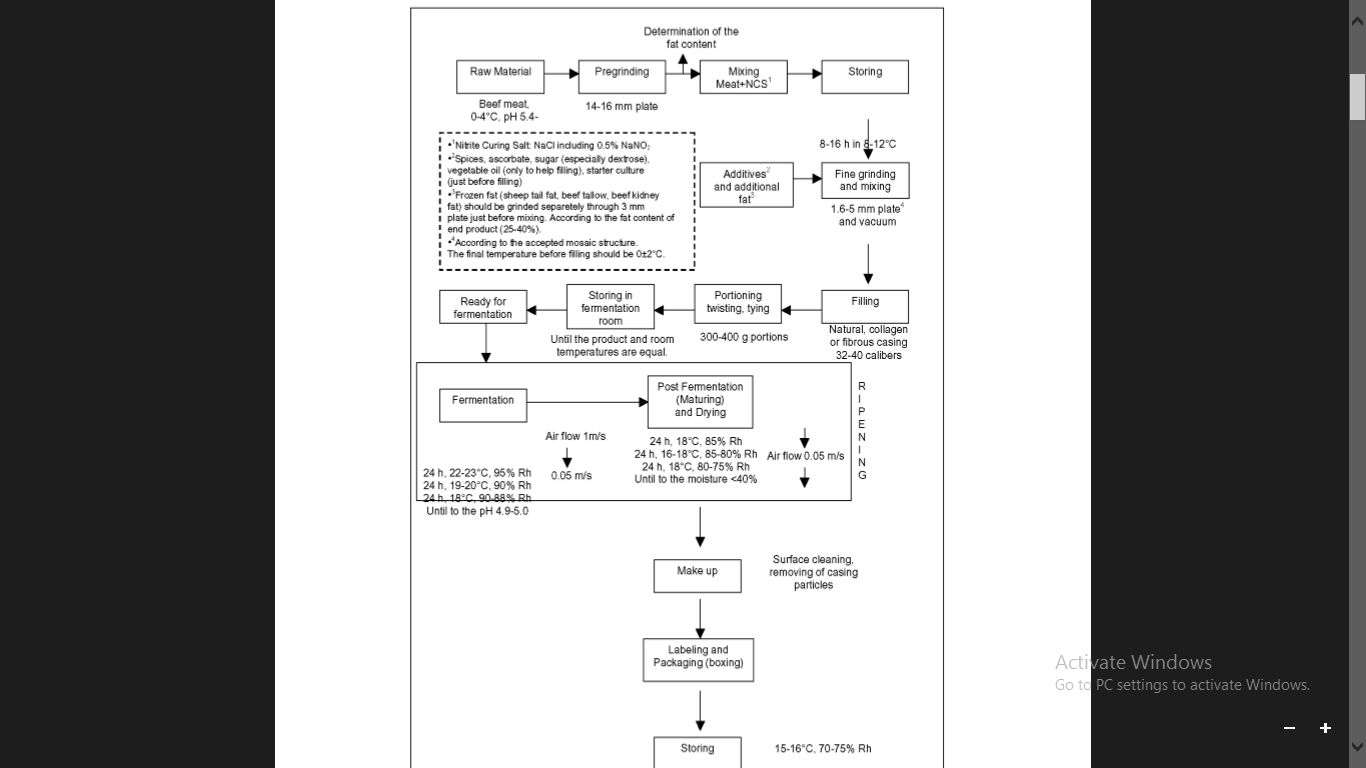
For example: Sucuk (Turkey), Hungarian Salami, Kantwurst (Austria), Lup cheong (China), Milano Salami (Italy), summer sausage (USA), salami aeros (Greece), Chorizo (Mexico, Spain), Salchichon (Spain), Fuet (Spain) and Pepperoni (Canada, USA) are the well known examples of fermented meat products.

**Meat Preservation**: Dry-cured sausages and smokecured sausages or cooked sausages are used for meat preservation particularly in countries with dry and colder climate respectively.

**Role of various micro-organisms**:

**LAB (Lactic acid bacteria)**: Lactobacillus (*L. plantarum*, *L.sake*, *L. curvatus*, *L. pentosus*), Pediococcus (*P. acidilactici*, *P. pentosaceus*) are considered as starter cultures required for the production of fermented meat products. Most of the times, these are naturally present as surface micro flora in raw meat most and sometimes added (if required) to enhance the physico-chemical properties of sausages and restrict the growth of some undesirable microorganisms. However, these types of microorganisms may cause slime and sour odour formation in sausages as well.

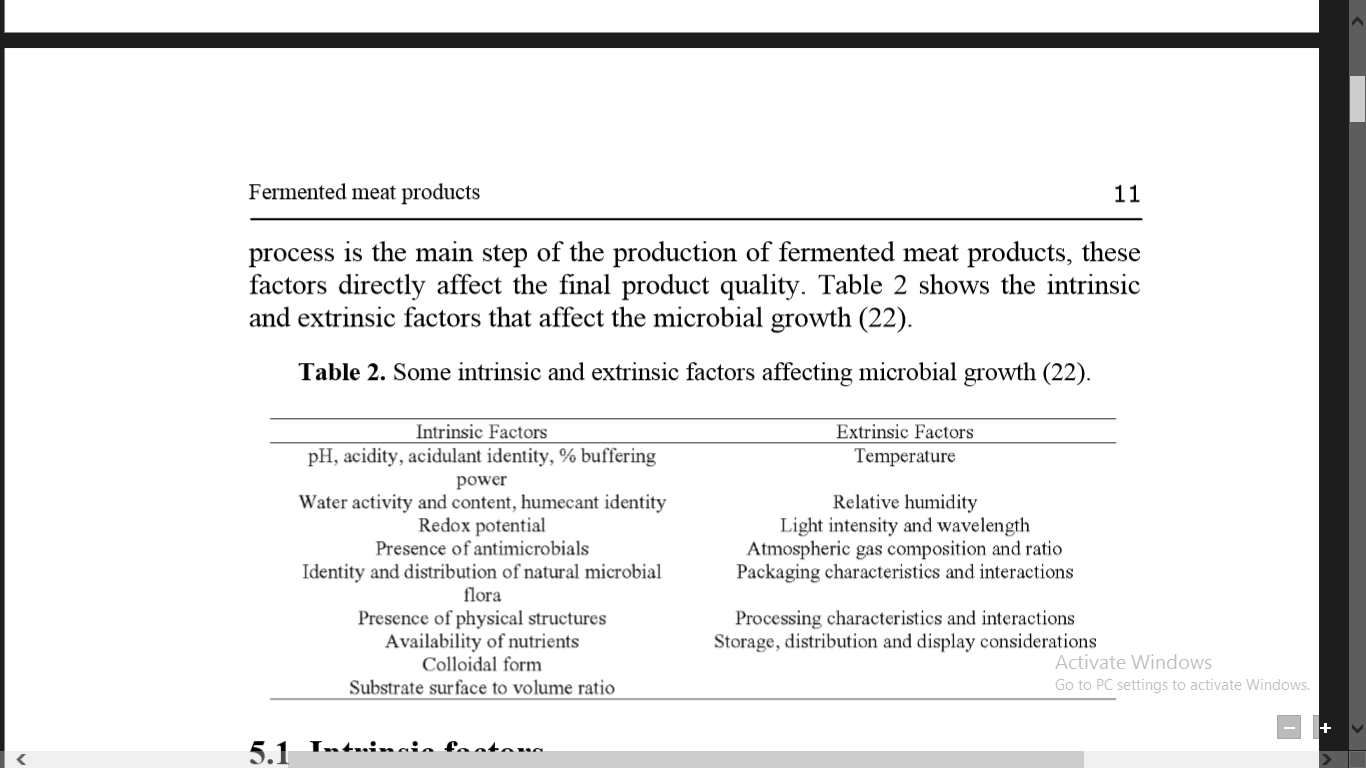
**Micrococcaceae**: Staphylococcus (*S. xylosus*, *S. carnosus*) and Micrococcus (*M. variants*) species are exploited to inhibit the growth of micro organisms responsible for spoilage, improve the flavor, aroma and colour stability of the cured-meat, minimizes the processing time and prevent rancidity which is attributed to various metabolic reactions governing decomposition of peroxides, proteolysis and lipolysis, nitrate reduction and O2 utilization.



**Fig: General production process of Turkish Sucuk (Ismail Yilmaz and H. Murat Velioglu)**

**Yeasts (*Debaryomyces hansenii*) and molds (*Penicillium nalgiovense*)** are also used as starter culture due to their ability to decompose peroxidase, proteins, fats and delaying action on rancidity which also enhances aroma. However, in some products such as Hungarian Salami, moulds and/or yeasts are the microorganisms responsible for appearance, prevention from O2 and light and they protect the product against drying.

**Factors affecting microbial growth**:



**Reference**: Ismail Yilmaz and H. Murat Velioglu. *Quality of Meat and Meat Products*, 2009: ISBN: 978-81-7895-386-1