

FOOD TECHNICAL SERVICES – PROJECT: VENISON CHORIZO DEVELOPMENT AND GOVERNMENT APPROVAL

Background:

A supplier of wild venison products, in the early stage of developing a range of cultured cured dried raw ambient stable venison sausages requested our assistance with both:

- Process development
- Understanding what had to be presented to the Local Authority as safety controls & validations to gain their approval to manufacture and sell the product.

Both parties were unsure of the processes that would lead to approvable products; we agreed to assist.



Summary of the final processes developed:

Such products have been around for centuries but only more recently become better understood.

They appear as complex series of interrelated steps:

- Mincing and mixing of meat fat and spices and water at the appropriate proportions.
- Adding to that mix, the microbial culture (specific strains of lactobacillus staphylococcus and Pediococcus) with fermentable sugars so that as a ready activated culture they quickly begin:
 - o Developing lactic acid with a corresponding fall of the pH,
 - o Competing with & inhibiting resident bacteria (which may include spoilers/pathogens),
 - o Developing colour flavour and texture changes to the meat.
- Then adding curing chemicals (salt, nitrate, nitrite), after which the cultures begin to reduce nitrates into nitrites – and so contributing further to the process by:
 - o Inhibiting: a) pathogen/spoilage bacteria and b) oxidation damage to the product,
 - o Creating desired colour and structural/textural changes to the meat protein.
- By controlling the temperatures and thus the times that the culture takes to attain predetermined set points of pH - we have some growth control of specific pathogens.
- The fermenting sausage mixture is filled into skins then hung to continue fermentation/cure. At this stage both air humidity and temperatures are controlled such that:
 - o Air starts moist & warm - to aid culture activity creating a fall in pH and a rise in nitrite.
 - o Air then becomes drier - bacterial activity slows, and drying becomes the main activity.
 - o Drying is at rates that avoid the formation of a pellicle and result in a wet/unsafe core.
- Drying ends & product is packed when the water-activity std is met (microbial activity stops).
- Progress is monitored to ensure safety and quality parameters are met – ie by measuring:
 - o Rates of pH fall and rates of drying
 - o Water activity which is to drop to specified limit before product is considered shelf stable.
- As ruminant meat is theoretically susceptible to carrying pathogenic acid tolerant E.coli, it was thought prudent to positive release each batch on microbe test results.

Process and product approval:

An application was submitted that successfully demonstrated to local the Environmental Health Team that processes & hazard controls were suitable, properly controlled monitored, recorded & validated as effective & that there was a thorough working HACCP based food safety system in place.

Approval to make & sell ambient stable cultured cured dried venison product was given.

