

PRACTICES IN THE MEAT PROCESSING SECTOR IN BOSNIA AND HERZEGOVINA

**Prof dr Mithat Jasic,
University of Tuzla, Faculty of Technology**

THE PURPOSE AND CONTENT OF THE PRESENTATION

THE PURPOSE OF THE PRESENTATION

- To present experiences of the meat processing sector from the perspective of producers;
- Presents potentials for improving competitiveness of dried meat products in BiH ;

CONTENT

- 1.Introduction
- 2.Product structure of meat processing
- 3.Traditional products and contemporary trends
implication nutrition on customer requests
- 5.Conclusion and suggestion
- 6.Literature

1.INTRODUCTION

In BiH breeds several variety of cattle, pigs etc. Live many species of game

Meat of farmed animals:

- **Large livestock** (cattle),
- **Small livestock** (sheep, goats),
- Poultry and
- rabbits
- **meat of game,**

From water:

- farmed and wild animals
- From salty and
- From fresh water

MEAT, FISH

- **Pork** (Bacon, Ham **sausage salami**)
- **Beef** -Pastrami (spiced and smoked beef, traditional **sausage salami**)
- **Poultry** (Sausage Salami)
- **Smoked fish** (Carp and trout)

1.INTRODUCTION

Practices in the meat processing

1. Typical salty and smoked meat products are: **Bosnian sudzuk, dry meat- pastrva specially Visocka, Herzegovinian prsut, stelja ovčija (sheep), dried and smoked fish.**
2. *Bosnian Sudzuk* is produced by traditional way, **without prescribed standards** and product is left to subjective the taste of manufacturer degustator.
3. General disadvantage of all dried meat and prsut - prosciutto is in **over salty and too little ripening.**

2.PRODUCT STRUCTURE OF MEAT PROCESSING

Practices in the meat processing

Various techniques for processing and preserving meat products are used:

1. Conventional methods of food preservations:

- physical,
- chemical and
- biological,
- biotic and abiotic

1. Traditional and

2. Improved traditional meat products

2.PRODUCT STRUCTURE OF MEAT PROCESSING

CURED (dried) MEAT PRODUCTS

Durable

- ham, dry ham, dry blade, dry neck, dry pork or other types of meat
- beef prosciutto – prsut (products of other types of meat in the name must label that specifies the type)

Half durable

Smoked ham, smoked bacon,

3. TRADITIONAL PRODUCTS

Traditional products
contemporary trends

- **implication on customer requests**
- **Scheme of quality and level of implementation**
- Conventional (ISO CEN BRC IFS etc)
- Organic
- Origin
- Halal cosher etc
- CFP EFP ecological requests
- Protect health and
- functional food



Example of a traffic light symbol (UK) ^a



Choices Programme (Example of a check-mark or tick symbol used internationally) ^c

TRADITIONAL BOSNIAN SUDZUK

Traditional Bosnian Sudzuk the meat products indigenous

- cattle (*Busa*) and
- sheep (*Pramenka*), and the last 50 years of meat from other bovine breeds.

The traditional product gets from **minced meat** with the addition of **salt and spices** (pepper and garlic), and is filled into the **small intestine**



TRADITIONAL BOSNIAN SUDZUK

- the gut cuts that obtained **form of horseshoe**.
- put on a cold smoked and classical type open fire minimally **10 days**.

For drying (smoking) used:

- *Beech wood,*
- *Spruce and*
- *Hornbeam*

Problem harmful burning products: **benzopyrene, anthracene compounds**

Improved technology: the frictional smoking



TRADITIONAL BOSNIAN SUDZUK

- After smoking in a special room Sudzuk is left to **mature for 10 days**, and gets stronger consistency.
- Final product storage in the **cooling chamber**. The total production process is around **3 weeks**
- The protein content in the product less than 16% and the collagen content should not be greater than 20%.



BEEF PROSCIUTTO

suho/suvo meso goveđi pršut pastrma

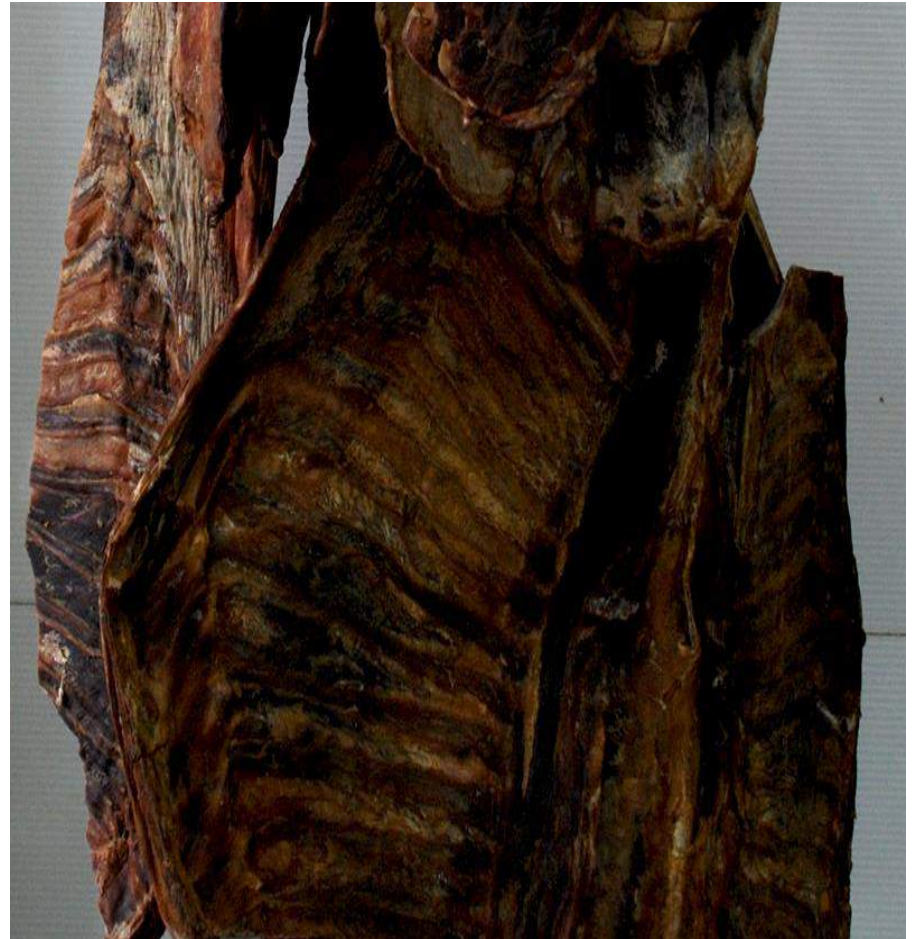
Beef Prosciutto- Suho/suvo meso ("dry meat") is a **smoked beef** preparation eaten in Bosnian, Croatian, Serbian, as well as Montenegrin cuisine.

Beef Prosciutto parts of beef with or without spices preserved by salting or salamurafication, cold smelling, drying and ripening.



SHEEP PROSCIUTTO – PRSUT (STELJA-PASTRMA)

- Smoked and dried product of sheep, salted and aging
- Product is smoked and dried in 10 days fermentation 15 and 30 days
- Taste consistency and texture must correspond to a mature meat product that has a smell and taste of smoke.



MANUFACTURERS

SUDZUK AND DRY MEAT MANUFACTURER

- A) Bajra doo Travnik
- B) Mujanovići doo Vogošća
- C) MI Semić doo Visoko
- D) MS Alem doo Bosanska Krupa
- E) Semko doo Visoko
- F) Njam Njam doo Prnjavor
- G) Export Import Eso doo Vitez
- H) Prima VIP doo Orašje

STELJA

- A) Mujanovići doo Vogošća
- B) MI Semić doo Visoko
- C) Bajra doo Travnik

KAURMA

- A) Mujanovići doo Vogošća
- B) MI Semić doo Visoko
- C) MenpromTuzla

1

Bajra d.o.o.
Travnik

2

Akova Impex d.o.o.
Sarajevo

3

Madi d.o.o.
Tešanj

4

Leburić komerc d.o.o.
Prnjavor

5

BOSNA-ET HOLDING d.o.o.
Cazin

6

Perutnina Ptuj-BH d.o.o.
Breza

7

Argeta d.o.o.
Sarajevo

8

Tulumović d.o.o.
Laktaši

9

Perutnina Ptuj S d.o.o.
Srbac

10

Ovako d.o.o.
Sarajevo

NUTRIENTS IN MEAT

PRODUCT	WATER	PROTEIN	FAT	ASH	KJ*
Beef (lean)	75.0	22.3	1.8	1.2	485
Beef carcass	54.7	16.5	28.0	0.8	1351
Pork lean	75.1	22.8	1.2	1.0	469
Pork carcass	41.1	11.2	47.0	0.6	1975
Veal (lean)	76.4	21.3	0.8	1.2	410
Chicken	75.0	22.8	0.9	1.2	439
Beef fat	4.0	1.5	94.0	0.1	3573
Pork fat	7.7	2.9	88.7	0.7	3397

Source : Meat processing technology for small- to medium-scale producers (FAO2007)

HARMFUL COMPONENTS OF DRIED MEATS

HARMFUL COMPOUND CURED MEAT

- **Nitrite, N-Nitroso Compounds and Nitrosamines**
- **Polycyclic Aromatic Hydrocarbons (PAHs)**
- **Heterocyclic Amines (HCAs)**
- **Sodium Chloride**

Processed Meat is Linked with Chronic Disease These include:

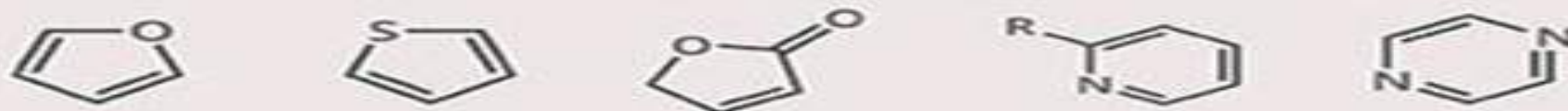
- High blood pressure (hypertension)
- Heart disease
- Chronic obstructive pulmonary disease (COPD)
- Bowel and stomach cancer

THE MAILLARD REACTION



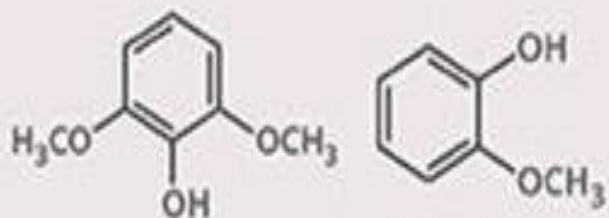
IN THIS REACTION, SUGARS (LEFT) REACT WITH AMINO ACIDS (RIGHT)

The Maillard reaction is responsible for the delicious flavors of barbecued meat. Sugars and amino acids in the meat react to form a range of products. Temperature, acidity, and type of meat all affect the compounds produced. Base structures of some general families of these compounds are shown below.



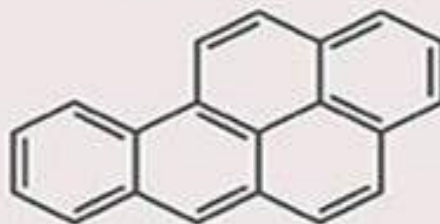
L TO R: FURANS, THIOPHENES, FURANONES, ALKYL PYRIDINES, PYRAZINES

SMOKY TASTE & FLAVOR



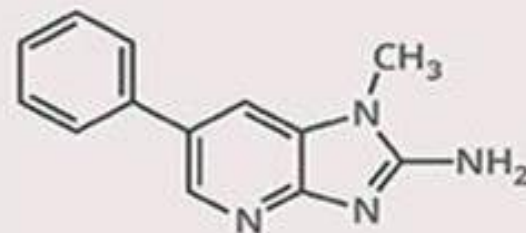
When charcoal burns, phenolic compounds form. Syringol (left) is a major contributor to barbecue's smoky aroma, and guaiacol (right) plays a big part in its smoky taste.

CARCINOGENS



AN EXAMPLE PAH

When meat cooks on a barbecue, fat drips onto the hot coals and forms polycyclic aromatic hydrocarbons (PAHs). There are a number of different PAHs that can develop, including carcinogens such as benzo[a]pyrene (shown above).

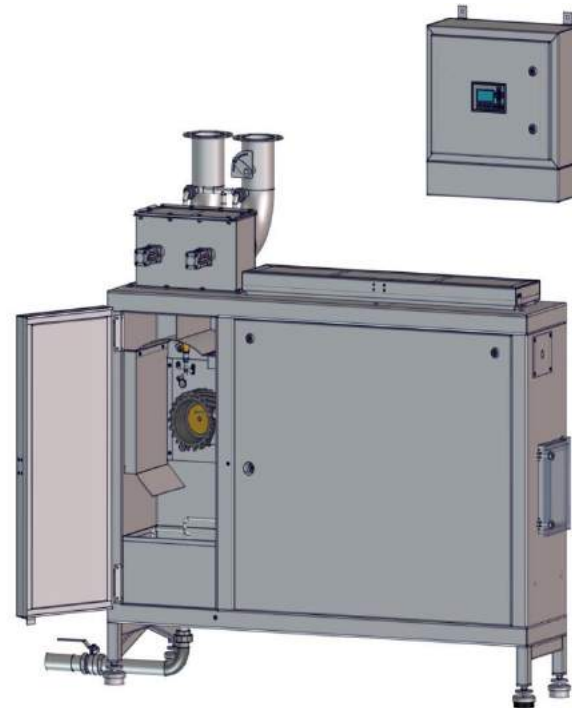


AN EXAMPLE HCA

Heterocyclic amines (HCAs) are another class of carcinogenic compounds that form as meat cooks. These molecules concentrate especially in charred areas of the meat. Research has shown that marinating meat in beer can dramatically reduce the concentration of HCAs.

SMOKE GENERATOR

- The smoke is produced by friction of wood pieces on a specially constructed roller.
- equipped with an automatic for the required pressure of wood pieces on the friction roller.
- automatically regulates the smoke generator operation.



Conclusion, suggestion and references

Conclusion and suggestion

- Increase the level of food safety
- Improve technology and preparation of drying meat especially use frictional smokiness
- Apply the statutory hygiene regulations
- Apply package hygiene
- Establish associations in small production batches

- Jašić M i saradnici (2009): Priručnik: Zastita izvornosti, geografskog porijekla i tradicionalnog ugleda proizvoda u prehrambenoj industriji, NERDA, Tuzla,
- Jašić M i saradnici (2011): Izvještaj o analizi tipičnih proizvoda na području sjeveroistočne BiH
- Jašić M i saradnici (2012): Stanje i perspektive razvoja tipičnih proizvoda sjeveroistočne BiH
- Preporuke Codex Alimentarius Komisije o higijeni hrane (načelima utvrđenim u dokumentu iz Codex-a Alimentarius-a CAC/RPC 1 – 1996, rev. 4-2003.).
- **Paket propisa značajnih za sigurnost hrane (higijenski paket BiH)**
- Pravilnik o usitnjenom mesu, poluproizvodima i proizvodima od mesa "Službeni glasnik BiH", broj: 82/13
- Pravilnik o organizaciji službenih kontrola proizvoda životinjskog porijekla namijenjenih ishrani ljudi („Službeni glasnik BiH“, broj 103/12);
- Pravilnika o načinu odobravanja objekata koji se bave uzgojem živih životinja, proizvodnjom, preradom, obradom i skladištenjem proizvoda životinjskog porijekla za izvoz na tržište Evropske Unije („Službeni glasnik BiH“ broj 102/12)

Hvala na strpljenju

