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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: MANUFACTURED MEAT AND METHOD OF PRODUCTION THEREOF

(57) Abstract: A method for producing ham is described with reference to a comparative example. Three hams were selected for manufacture, comprising one for processing in accordance with the present invention and two controls. Two were boned out and one was left on the bone. The three hams and the excised bones were pickled in brine and saltpetre in the conventional manner. The brining solution was supplemented with sugar and pineapple juice. The cured bones were laid adjacent the excision slit in the cut in intimate contact with the flesh of one of the hams, and the whole cut was secured by cook-in elastic netting. The second boned out ham and the bone-in ham were similarly bound in netting to eliminate any variation in cooking occasioned by the netting. The respective cuts were then identically smoked to a cooked state in the conventional manner. On a blind tasting, the control boneless product was picked as such by a statistically significant proportion of tasters, whereas the bone-in ham and ham in accordance with the present invention were adjudged to be ham on the bone by a majority of tasters, with no statistically significant variation of opinion between the two products.

MANUFACTURED MEAT AND METHOD OF PRODUCTION THEREOF

This invention relates to manufactured meat and methods of production thereof.

This invention has particular application to the production of cooked ham, and the invention will be described hereinafter with reference to this application. However, it will be understood by persons skilled in the art that this invention may find application in the production of other manufactured meats such as bacons and other smoked or cured meats.

It is generally considered that leg ham on the bone is a superior product to boneless ham. In the production of boneless ham and other cured cuts, the brined and cured meat is boned out and the resulting cut is then usually wrapped in a cook-in wrap of polymer or net, or a smoke permeable cook-in wrap for hams or the like. The product is then steam cooked, smoked to cook, or is partially cooked by smoking followed by a heat cooking in a cook-in package, as the product requires.

The resulting product is relatively easier to carve than the bone-in product, and is appreciated by the market as having less waste. However, the boneless products are perceived to have inferior eating quality. Most persistently, the impression of the market is that the flavour of bone-out hams is of less quality that the flavour of bone-in ham.

In one aspect the present invention resides broadly in a method of production of manufactured meat including the steps of:

providing a boneless cut;

curing the cut and a bone or bone substitute;

binding the cured bone or bone substitute in intimate contact with the flesh of the cut, and

cooking the bound cut.

Conventional wisdom has it that the superior flavour of ham on the bone is predicated by the tissue-bound intimacy of the bone to the flesh throughout the curing and cooking process in terms of flavour development and thermal transfer through the bone. It has been suprisingly determined that, contrary to this conventional wisdom, essentially the same quality and flavour may be produced by a process in accordance with the present invention.

The cut may be any meat cut whether being of its nature boneless or requiring to be boned. The bone may be sourced from the cut or may be from elsewhere on the same or another beast.

The boneless cut may be reshaped prior to curing. For example, the reshaping may be performed by mechanical stretching or rehanging. In the case of hams or the like, when the bone is removed the uncured or cured ham may advantageously be rehung or otherwise stretched . The ham muscle may be readily lengthened since there is no ham bone or associated tendons to support the muscle in shape. This hanging or stretching creates the appearance of a larger, longer and/or more streamlined appearance to the product.

The cure may be any suitable cure including but not limited to brining or pickling, sugar cure or the like, with or without saltpetre or other curing excipients. The cure may be the same or different as between the cut and the

bone or bone substitute. Preferably, the cure for at least the cut is selected from cures conventionally used to cure the cut.

9. A method according to any one of the preceding claims, wherein said

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10. A method according to claim 9, wherein said binding is selected from a natural or synthetic casing or film, net or cloth.

The binding may be by any suitable means at least in part dictated by the 10 cooking process. The binding is advantageously selected from conventional cook-in bindings. For example, the binding may be by means of a natural or synthetic casing or film, net or cloth.

The cooking may be by means of one or more of smoking, thermal cooking such as roasting, steaming or boiling, or the like.

15 The intimate contact between the cured bone and the cured flesh may comprise reinsertion of the bone into the cavity of the boned cut, or may be laid up against an exposed surface of the flesh of a boned or boneless cut.

The intimacy of contact between the flesh and the bone may be supplemented by the addition of a substance selected to enhance diffusion of 20 the principles responsible for bone-enhanced flavour. For example, the bone and/or cut may be treated with a food acid or the like. The additive may also include or comprise a flavouring excipient such as a fruit juice, coulis or the like.

In a further aspect the present invention resides broadly in a method of production of manufactured meat including the steps of:

boning out a cut to provide a boneless cut;

curing the cut;

binding a shaped member into an indent left in said cut by said boning, and

cooking the bound cut.

The shaped member may be selected from edible or inedible members. For example, the shaped member may be selected from timber, pipe, stainless steel, salami or salami shaped product, or any derivatives thereof. The shaped member may be shaped to conform to the indent. For example, for a ham product the shaped member may be shaped to approximate a ham bone shape. It has been surprisingly determined that a wide variety of forms and materials of the member create the marketing advantages of the equivalent bone-in products.

The shaped member may comprise or include an artificial flavouring device. The artificial flavouring device may comprise an artificial carrier impregnated with a flavouring principle. For example an artificial ham flavouring may be associated with an artificial carrier such as a sausage skin and inserted into the indent or indents, with or without being in contact with the cut flesh. For hams, the flavouring principle may include a product formed from cured ham bones.

In a yet further aspect this invention resides broadly in a manufactured meat product when produced by any one of the foregoing methods of the invention.

The invention will be further described with reference to a preferred embodiment of the present invention, in accordance with the following example.

EXAMPLE

Three hams were selected for manufacture. Two were boned out and one was left on the bone. The three hams and the excised bones were pickled in brine and saltpetre in the conventional manner. The brining solution was supplemented with sugar and pineapple juice.

The cured bones were laid adjacent the excision slit in the cut in intimate contact with the flesh of one of the hams, and the whole cut was secured by cook-in elastic netting. The second boned out ham and the bone-in ham were similarly bound in netting to eliminate any variation in cooking occasioned by the netting. The respective cuts were then identically smoked to a cooked state in the conventional manner.

On a blind tasting, the boneless product was picked as such by a statistically significant proportion of tasters, whereas the bone-in ham and ham in accordance with the present invention were adjudged to be ham on the bone by a majority of tasters, with no statistically significant variation of opinion between the two products.

It will of course be realised that while the above has been given by way of illustrative example of this invention, all such and other modifications and variations thereto as would be apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of this invention as defined in the claims appended hereto.

CLAIMS

1. A method of production of manufactured meat including the steps of:

providing a boneless cut;

curing the cut and a bone or bone substitute;

binding the cured bone or bone substitute in intimate contact with the flesh of the cut, and

cooking the bound cut.

2. A method according to claim 1, wherein said cut comprises a boned-out cut.

3. A method according to claim 1 or claim 2, wherein said bone is derived from said cut.

4. A method according to claim 1 or claim 2, wherein said bone is selected from bones from the same or a different beast than said cut.

5. A method according to any one of the preceding claims, wherein said boneless cut is reshaped prior to curing.

6. A method according to claim 5, wherein said reshaping is performed by mechanical stretching or rehanging.

7. A method according to any one of the preceding claims, wherein said cure is the same or different as between said cut and said bone.

8. A method according to claim 7, wherein said cure for at least said cut is selected from cures conventionally used to cure said cut.

9. A method according to any one of the preceding claims, wherein said binding comprises a cook-in binding.

10. A method according to claim 9, wherein said binding is selected from a natural or synthetic casing or film, net or cloth.

11. A method according to any one of the preceding claims, wherein said cooking comprises one or more of smoking, thermal cooking such as roasting, steaming or boiling, or the like.

12. A method according to any one of the preceding claims, wherein said intimate contact between the cured bone or bone substitute and the cured flesh comprises either reinsertion of the bone into the cavity of the boned cut, or laying up of said bone against a selected exposed surface of the flesh of a boned or boneless cut.

13. A method according to claim 12, wherein the intimacy of contact between the flesh of said cut and said bone or bone substitute is supplemented by the

addition of a substance selected to enhance diffusion of the principles responsible for bone-enhanced flavour.

14. A method according to claim 13, wherein said substance is selected from food acids or the like.

15. A method according to any one of claims 13 and 14, wherein said substance includes or comprises a flavouring excipient.

16. A method according to claim 15, wherein said excipient is selected from fruit juices, coulis or the like.

17. A method of production of manufactured meat including the steps of:

boning out a cut to provide a boneless cut;

curing the cut;

binding a shaped member into an indent left in said cut by said boning, and

cooking the bound cut.

18. A method according to claim 17, wherein said shaped member is selected from edible or inedible members.

19. A method according to any one of claims 17 and 18, wherein said shaped member is selected from timber, pipe, stainless steel, salami or salami shaped product, or any derivatives thereof.

20. A method according to any one of claims 17 to 19, wherein said shaped member is shaped to conform to said indent.

21. A method according to any one of claims 17 to 20, wherein said member includes an artificial flavouring device.

22. A method according to claim 21, wherein said artificial flavouring device comprises an artificial carrier impregnated with a flavouring principle.

23. A method according to claim 21, wherein said flavouring principle includes a product formed from cured ham bones.

24. A manufactured meat product when produced by the method of any one of claims 1 to 23.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/00139

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: A23L 1/31

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

SEE BELOW

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SEE BELOW

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIDS CA FSTA: ham, bone, cook, boil, roast, steam, flavor, flavour, taste

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2728435 A1(BUGEY SALAISONS SA) 28 June 1996	All
X	US 2 789 908 (DOEPKIN, ALBERT L) 23 April 1957	All

☐ Further documents are listed in the continuation of Box C ☐ See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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5 March 2002

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU02/00139

Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos :

because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos : 19, and part 17-22 and 24

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

The claims are not limited to the technical features that define the invention, namely, de-boning the ham, cooking the de-boned ham with the bone attached, and removing the bone afterwards to provide convenience in slicing. The above claims are not limited to cooking the ham with the bone, but encompass cooking the ham with any "shaped member". They have only been searched in so far as the "shaped member" is limited to bone.

3. ☐ Claims Nos :

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.