



Hawkins Watts Limited

PO Box 12-347, Penrose,
Auckland, New Zealand.
43 Maurice Road,
Penrose, Auckland.
Ph: +64 9 622 2720
Fax: +64 9 622 2725
www.hawkinswatts.com

Development of a 10% Fat Frankfurter.

No one is quite certain when sausages were first made and eaten, although the concept of the sausage can be traced back to Roman times; the name is derived from the latin word *salsus*, meaning salted or preserved.

Today the term "sausage" refers more to a method of serving rather than a method of preservation. Over the years different countries and regions have developed their own distinctive types of sausage, each type being dependent on the availability of various ingredients, such as meats and spices, and the climate.

Frankfurters are often abbreviated to "franks" , named after the city of Frankfurt Germany, where the combination of sausage and bun is thought to have originated. However the recipe for the Frankfurter sausage is thought to originate from Vienna.

Regardless of the origins, sausages are generally prepared from some form of comminuted and seasoned meat and salt, and have been used as a cost effective method for utilising trim and off-cuts. Mechanically deboned meat has also found use in sausages although it has little texture and is often liable to "oil out" upon cooking.

Sausages may contain up to 20 – 30% fat, which is considered to be a key component of the final product. Fat contributes to the tenderness, juiciness and flavour delivery of the cooked sausage. However dietary concerns over fat consumption in recent years has necessitated small goods manufacturers to revise their sausage recipes and produce lower fat products without sacrificing eating enjoyment.

Reducing the fat content of a sausage recipe without consideration of other factors can have a significant affect on flavour and texture; often sausages with reduced fat can loss their juiciness and mouthfeel, and become crumbly and dry.

Technologists have investigated numerous ingredients to find recipes which delivery both and flavour without the disadvantages.

Alginate is an ingredient derived from seaweed and is well known to the meat industry. Alginates are unique gelling ingredients which have the ability to form gels at chilled temperatures in the presence of soluble calcium ions. The resultant gel is extremely heat stable and robust, making them well suited to uncooked meat products.

Fibers are also well know to the food industry but developments in the last decade have seen major improvements in functionality and water holding capacity without a pasty mouthfeel or cereal notes.

Trials were recently conducted with a 10% fat frankfurter recipe, comparing the affect of alginate and fibre on the texture of the cooked chilled product. In combination it was found that these ingredients improved the overall functional properties of the frankfurter and reduced cooking losses.

Frankfurter Recipe

Beef or Pork Mince (85%CL)	67.0 %
Salt	2.00 %
Potato Starch	2.00 %
Dextrose	1.00 %
Herbacel Citrus Fibre	1.00 %
Protanal™ Alginate‡	0.50 %
Sodium TriPolyPhosphate	0.25 %
Spice Oleoresin*	0.05 %
Sodium Nitrite	0.02 %
Iced Water	26.18 %
Final fat content:	approx 10%

‡ Protanal Alginate supplied By FMC BioPolymer

* Lionel Hitchen Oleoresin Sausage Seasoning FN12502

Procedure

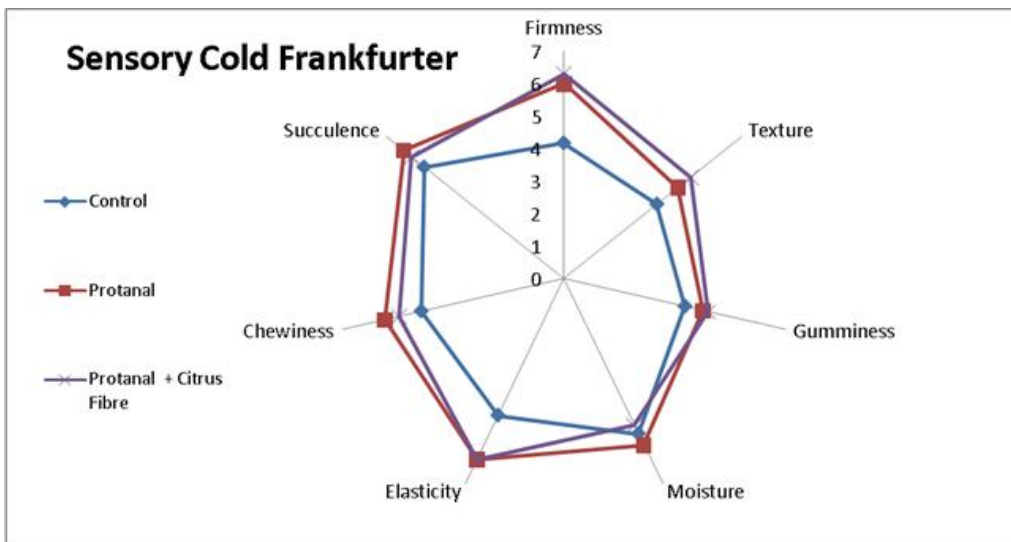
1. Add the minced meat to a bowl cutter.

2. Blend the Protanal Alginate with the dextrose then add to the meat and mix through.
3. Mix the salt, nitrite and phosphate with one third of the ice water then add to the bowl chopper.
4. Chop at low speed for 1 minute to extract protein.
5. Chop at high speed for 2 minutes.
6. Add seasoning and remaining ice / water.
7. Continue chopping for 3 minutes. Temperature is about 10 deg C or lower.
8. Add fiber and chop well until dispersed. Then add starch.
9. Dish out paste into filler and the emulsion stuffed into casings.
10. Heat treated the product in a steam atmosphere until a core temperature of 73 deg. C is reached.
11. Cool sausages with shower spray.
12. Chill overnight and evaluate.

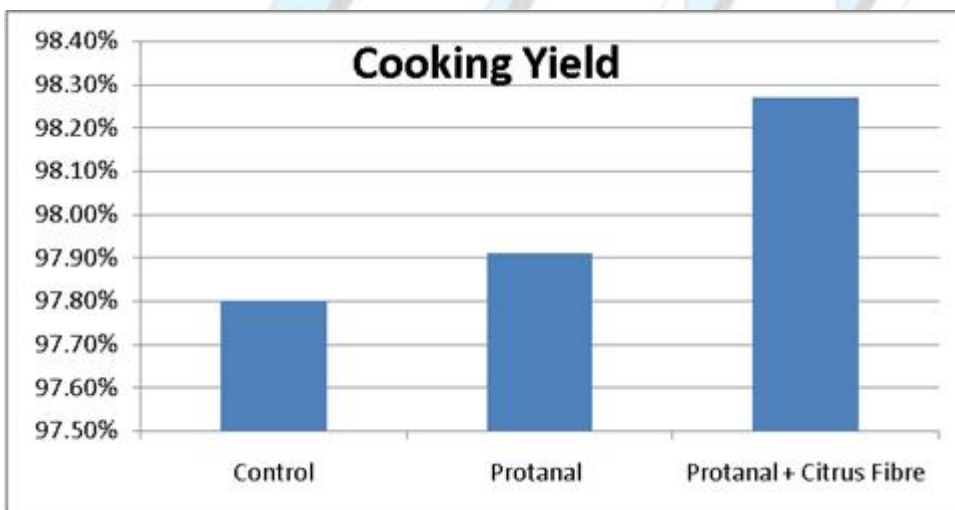


Observations & Results:

The frankfurters were evaluated for various textural parameters. Panellists noted that samples containing alginate and fibre were judged to have good firmness and succulence without being overly chewy.



The combination of alginate and fibre also had a synergistic effect on cook yield with alginate and citrus fibre giving the best results;



Trials have also been carried out using 10% mechanically deboned meat with 57% beef 90CL with similar textural results.

Conclusion

Alginate and Citrus Fibre offer advantages to manufacturers wishing to formulate products with reduced fat contents without comprising on texture. The trial recipe can be manufactured using existing equipment.

Further information is available from Stuart Jones at Hawkins Watts Ltd, stuart@hawkinswatts.com, phone 09 622 2720

Gelcarin and Protanal are trademark names from FMC Corporation. Herbacel Citrus Fibre is trademark name of Herbafood Ingredients.

*This article originally appeared in NZ Food Technology July 2008 Magazine.
<http://www.foodtechnology.co.nz/articles/july08/articles/meat-and-seafood.php>*

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