

Benefits of functional fibres

Fibres are a class of ingredients which have been receiving increasing attention from the sausage sector, given some of their interesting properties. However, many in the sector are still learning what fibres are about.

By Dr Rogério G. T. da Cunha

The use of functional fibres and their application is a topical issue in the sausage industry. Ana Gabriela V. A. Januzzi, from Campus do Brazil (branch of the Italian company Campus) addressed some of the major issues related to the use of fibres at a recent symposium for the meat processing sector in Brazil.

Januzzi said that “fibre” is one of those curious cases where the meaning of a word has changed its common usage due to scientific research. Thirty or forty years ago, it was used with reference to plant threads that looked thin, long and resistant. Fibres for clothing, such as cotton, linen or hemp are good examples.

However, in more recent times it is commonly associated (though ill-defined) with respect to meat products. Nutritionists and physicians recommend a certain amount of daily consumption and explain their benefits. Still, most people have a poor idea of what they really are and still tend to associate them with resistant, more hard-to-chew foods, such as celery or fennel. We have just a vague idea that they are useful for intestinal health, that they do something with respect to fats and that they do not have calories. And that’s pretty much it.

In the sausage sector, people have to



come to grips with more issues. Mainly, these refer to what are the effects (positive and negative) of adding different kinds of fibres to their products.

Clarifying the picture

“Dietary fibres do not constitute a definite chemical group, but are a combination of heterogeneous chemical substances which resist the activity of the enzymes of the digestive tract,” says Januzzi, referring to a definition by Asp et al (1992). Substances included in this definition are celluloses, hemicelluloses, pectin, lignin, gums, and algae polysaccharides.

The only thing that seems to bind them together is the resistance to our own enzymes. In other words, they may leave the body exactly like they entered: unaltered. Their benefits to us are thus indirect. Some help peristalsis (the gut movements which pushes food down the tract). Some absorb fats and decrease their absorption by our body. Other still can be attacked by the micro-flora and then result in beneficial substances.

“For the food sector, however, more important than the definition is a basic dichotomy, between insoluble and soluble fractions. Cellulose, lignin, and some hemicelluloses belong to the first group, while pectin substances, gums and mucilage are soluble components,” Januzzi explained.

The importance, she said, is the quite different functional properties they have. “These two categories differ in their ability to bind water, and thus to swell. They are also different with respect to their capacity to form a gel, in their solubility and in the size of the particles,” Januzzi added. “The insoluble/soluble characteristic of a fibre will depend on the proportion of the two kinds. Such ratio will also determine the overall properties and attributes of the fibre. Thus, it is not difficult to imagine that the effects they will have when used as ingredients in foodstuff may be extremely varied,” she said.

Insoluble or functional?

In the wrestling between insoluble and



Ana Gabriela V.A. Januzzi from Campus do Brazil: "The effects fibres have when used as ingredients in foodstuff may vary extremely."

Comparison research

Thus, the bottom line seems to be that each type of fibre may have different benefits and their use may depend on what one wants. In other cases they may even have similar effects. Obviously, there may also be drawbacks which the

companies do not put forward. And one kind may well be superior to the other one. To solve these issues, independent researchers need to carry out a comparison of both kinds of fibres in the same sausage product and with the same experimental set-up. **MI**

soluble fibres (which she labels functional), Januzzi is more in favour of the last. According to her, insoluble fibres retain less water, just adsorbing it (a physical process in which the water is not fully bound, but just "sticks" to the surface of a product). Thus, they do not swell and have a smaller capacity to form gels.

Now, from the other side. J. Rettenmaier & Sohne GMBH + CO (JRS), which produces the Vitacel® line of insoluble fibres, claims that their wheat fibre, for example, improves the structure and texture of sausage products. They also say it has a synergistic effect with emulsifiers and thickeners, and that it helps in the drying of some products. Lastly, they say that it has a high capacity to absorb and retain oil and water, by forming a 3-D web which incorporates them through capillarity. They also do label their fibres as functional ingredients.

Back to the soluble fibres, Januzzi has made some tests by adding her company's fibres, Best Fibre 110 and Best Fibre Tris, which have a soluble fraction, to cooked sausages.

For sausages, the claimed benefits include, less breakage during frying, less drip and liquid in the package, and cost reduction.

"Lastly, the trials and tastings we did with the cooked sausages showed good biting resistance, with the feeling of having more meat. Additionally, it led to a better taste, overall appearance, and less breakage in the industrial oven," Januzzi stated.