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Herbs and Berries Can Preserve Meat Products Naturally

Herbs and berries in organic meat production can kill two birds with one stone – the meat is conserved in a natural and healthy way and consumers are offered products with an exciting new taste.

How would you like a healthy and tasty blueberry salami? Or some sausage with sage? Exciting new flavour combinations that also preserve the meat products in a natural way could turn out to be the result of a project that scientists at Aarhus University are participating in.

Natural food. Meat products preserved with herbs and berries may be healthy options for tomorrow's consumers. [*Photo: Flemming Hansen, DMRI*]

Some berries, leaves, bulbs, roots and stems are known to contain substances that inhibit bacterial growth. In some plants the concentrations of these compounds is so high that they could perhaps be used to preserve foods. This theory will now be tested in new organic and conventional meat products.

The new products will be developed in a project where scientists from Aarhus University collaborate with the Danish Meat Research Institute (DMRI), who are the project leaders, and with Tulip Food Company and Hanegal on the development of organic and conventional meat products that are preserved using antibacterial berries and herbs.

Natural preservatives

Traditionally, meat products are preserved by adding antibacterial compounds such as nitrite or salt . In organic products it is not allowed to to use nitrite as an additive and for health reasons the EU recommends that both nitrite and salt contents are reduced in conventional food products. An alternative is to turn to the products of Mother Nature: antibacterial organic berries and herbs.

On the background of existing knowledge and experience, scientists from Aarhus University prepared an initial list of 37 species that all potentially have an antibacterial

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effect, which included, among others, rosemary, rhubarb, wild garlic, sea buckthorn, rosehip and hops. All these plants have been tested at DMRI for their antibacterial effect on three selected species of pathogenic bacteria, namely *Listeria monocytogenes, Salmonella typhimurium* and *Escherichia coli*.

After this step, 15 potentially interesting plant species remained on the list. Scientists at Aarhus University then, in cooperation with DMRI, further shortened the list, so that it now only contains plants that are reasonably easy to grow or buy in Denmark. For this reason the aromatic bog-myrtle was taken off the list, because although it had a positive effect on *Listeria*, it is difficult to grow commercially.

Handy herbs and berries

The second reduction left eight plant species on the shortlist that are easy to grow, handle and supply and that contain different antibacterial compounds. These eight are Aronia, sage, savory, sloe, lingonberry, wild garlic (ramsons), red currant and horseradish.

"Our next step is the development and testing of processing and application methods for these natural preservatives without destroying their preserving abilities. Should they be chopped, mashed or freeze- or air-dried? Should they be mixed with water or oil? And how should we pasteurise them," asks senior scientist Martin Jensen from Aarhus University. He and his colleague, senior scientist Kai Grevsen, will also be looking at developing the most optimal cultivation and storage methods so that the desired qualities are preserved for as long as possible post-harvest.

DMRI and the participating companies will also be investigating how to achieve a homogenous distribution of the preservative in the meat – should it be mixed in as a powder or sprayed onto the product as a liquid – and how much should be used?

It is also important to ensure that consumers approve of the idea. MAPP – Centre for Research on Customer Relations in the Food Sector at Aarhus University will therefore be looking at the attitude of consumers to the use of herbs and berries for preservation. The Centre will also be studying how consumers react to the new products.

The project that started in 2011 and finishes in 2013 is financed by the Ministry of Food, Agriculture and Fisheries' Green Development and Demonstration Programme (GUDP).

You can read more about the project by clicking here.

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