

Aquanova intros next-generation preservatives with nanotechnology

By Jess Halliday

16/08/2007 - German ingredients firm Aquanova has found a way to extend the use of preservatives sorbic and benzoic acid into foods with a high pH using its NovaSOL nanotechnology.

Sorbic and [benzoic acid](#) are commonly used as preservatives, but until now their usefulness has been limited to the more acidic end of the pH scale, since performance decreases above pH4 and above pH6 they are almost totally ineffectual.

The company claims its breakthrough will take the preservatives into "completely new dimensions and areas". It is introducing two new ranges, called [NovaSOL DS](#) and [NovaSOL DC](#). The former is for use inside food and beverage products, and the latter on surfaces - be it the surface of a food like sausage casings, cheese rinds and citrus fruits, or on equipment used by food manufacturers and other industries.



The NovoSol technology - which has already been applied to vitamins and several other ingredients, both nutraceutical and technical - involves encapsulation of the ingredients in product micelles which measure just 30 nm.

In the case of sorbic and benzoic acid, this enables pH-independent performance through the whole acidity scale. Thus, whereas in the past the preservatives were only suitable for use in sour-tasting products, they can now be used to protect against microbial spoilage in milder tasting products as well.

Sales and marketing director Wolfgang Haehnlein explained to Food Navigator.com that this is because the preservative is shielded from direct contact with the rest of the formulation by the micelle. Unlike regular forms of encapsulation, which would dissolve in the formulation, the micelles only open up when they come into contact with a microorganism.

PH-independence, Haehnlein said, is the most exciting use of the technology, which has involved some adaptation of the NovaSOL process from previous applications. NovaSOL DS can be used in any food product where a preservative is needed, whether liquid or solid, since the micelles are soluble in both water and oil.

Another benefit of NovaSOL for preservatives tipped by [Aquanova](#) is that that it removes the need to use the salt forms of sorbic and benzoic acid. Because the free-acids have low-solubility, in 90 per cent of cases the salt forms (eg sodium benzoate or potassium) are used.

However these salts come with bitter taste issues, which have presented considerable taste challenges.

As for NovaSOL DC, this also allows for the preservatives to spread evenly across the whole surface area of the product, where it is claimed they can prevent the growth of mould for longer.

When something is dipped in NovaSOL DC, the micelles form a continuous protective layer across the surface, which prevents microbial organisms for entering. Haehnlein said that test have shown it can prevent the migration of mould for longer than other solutions, but he was not able to put a definite figure on the length of time since tests are ongoing.

In the case of cheese, NovaSOL DC can be used instead of the natamycin to prevent surface mould growth, said Haehnlein. Some manufacturers object to natamycin on the grounds that it is an antibiotic.

The NovaSOL DS and DC products are available in a range of concentrations for both sorbic and benzoic acid, and for a potent combination of the two.

The applications for NovaSOL DS and DC are currently in the test phase. Testing partners include research institutions and industry partners, who it is hoped will chose to make use of the nanotechnology in the future.

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