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# Separation system targets whey protein purity

By Neil Merrett, 03-Dec-2008

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**A new chromatography development used to isolate whey-based proteins like alpha-lactalbumin can ensure higher quality, cost efficient ingredients for dairy formulation, according to its manufacturer.**

Upfront Chromatography, a Denmark-based supplier of separation systems, says that it latest development in Expanded Bed Adsorption (EBA) technology targets more cost efficient means of providing functional ingredients.

A spokesperson for the company told DairyReporter.com that although its second generation EBA had many applications in ingredient processing, it was now being released specifically to optimise quality and purity of alpha-lactalbumin.

**Alpha-lactalbumin**

According to the group, alpha-lactalbumin whey proteins are found dominantly in mammalian and human milk, but are hard to add to products such as infant formulas to bring their composition in line with breast milk.

A company spokesperson cited research suggesting the protein can ensure increased calcium and zinc absorption if used at the appropriate level of about 20 – 25 per cent of a formula.

*"Although infant formulas currently produced on the market closely mimic protein profile of human breast milk, the concentration of alpha-lactalbumin is still relatively low,"* the spokesperson stated. *"Beta-lactoglobulin, a protein known as an allergic protein and not found in human milk, is the most dominant."*

**Heat shift**

While Upfront says that existing methods of producing alpha-lactalbumin rely on extensive heat treatment, the group claims its adsorption column EBA technology is less destructive and can preserve a number of proteins during processing.

According to the spokesperson, heat treatment can lead to partially denatured products while also destroying valuable proteins for other uses.

*"We can help make products as close as possible to nature by purifying proteins from bovine milk,"* stated the spokesperson. *"[We] believe that dairies and cheese producers would have a great interest in our technology because it can maximize the value of their raw material."*

**Column design**

According to Upfront, the new technology is based around the use of a chromatographic column that carries an adsorbent composed of high density beads.

It is these beads that the company says capture the alpha-lactalbumin and separate it from the beta-lactoglobulin present in sweet and acid whey-derived from cheese and caseinates.

As part of the design, the group claims that the EBA column is able to allow throughput of raw crude raw materials without requiring additional pre-treatment, such as centrifugation or filtration.

**Additional ingredients**

Upfront claims that by not relying on the heat treatment for separation, the EBA system can also isolate beta-lactoglobulin in a purified state to potentially improve profitability.

*"Beta lactoglobulin is also an interesting protein with highly functional food ingredient profile, which can be used as a gelling agent for food gels,"* said the spokesperson. *"It will have a specific market within whey protein isolates which require optimized gelling properties."*



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