

### ++ HEAT-RESISTANT PHYTASE IN WHEAT

In the baking industry, enzymes produced by microorganisms are often used. Due to the high baking tempera-

*in transgenic wheat (*Triticum aestivum* L): deposition pattern, thermostability, and phytate hydrolysis. Journal of Agriculture and Food Chemistry 54 (13) 4624-4632. +++*



tures, the enzyme needs to have a good thermal tolerance. It is known that microbial phytases used as feed additives can improve seed phytate phosphorus digestibility and reduce the environmental phosphate load. Furthermore, the genetic engineering of staple foods for increased phytate expression could possibly improve the absorption of iron and zinc in humans. Therefore, enzymes that are not inactivated by high baking temperatures could be beneficial in raising the bioavailability of certain minerals.

A study by Brinch-Pedersen et al., investigated the thermal tolerance of in planta-synthesized recombinant enzymes obtained from two transgenic wheat lines, one expressing a phytase from *Aspergillus fumigatus* having a low denaturation temperature (62.5°C) but high refolding capacity, the other expressing an engineered phytase designed to possess a high denaturation temperature (89.3°C). The findings revealed greater expression and thermal stability for the engineered phytase than for the native fungal enzyme having a higher refolding capacity. It was concluded that recombinant phytase expression in plants may provide a realistic strategy for alleviating micronutrient deficiencies in humans.

*Source: Brinch-Pedersen, H; Hatzack, F; Stoger, E; Arcalis, E; Pontopidan, K; Holm, PB (2006). Heat-stable phytases*

### ++ AROMA AND COLOR GO TOGETHER

Ever tried eating a deliciously smelling piece of strawberry cake with your eyes shut or in a light environment that turns the strawberry blue? Doesn't seem to taste as good as you expected? Many fruit odors are associated with colors. Lemons – yellow, strawberries – red. Such cross-modal associations between vision and olfaction seem to be obvious, but there have been only a few studies looking into this phenomenon. Their findings, however, suggest that a reliable multi-sensory interaction between olfaction and vision might be possible.

A study by Dematte et al. investigated the nature of any cross-modal associations between odors and colors and

the robustness of these associations using a cross-modal variant of the IAT. IAT is an implicit association test that was mainly developed to study social attitudes and general preferences by presenting uni-modal visual stimuli. The odors evaluated in the study were strawberry and spearmint, with the colors being pink and turquoise. Results showed that the participants responded more rapidly and accurately to odor-color pairings having a stronger association than those having a weaker or no association, suggesting that odor-color associations can be both systematic and robust.

*Source: Dematte, ML; Sanabria, D; Spence, C (2006). Cross-modal associations between odors and colors. Chemical Senses 31 (6) 531-538. +++*

### ++ SMB TECHNOLOGY FOR GLUCOSE ISOMERIZATION

High-fructose syrup (HFS) is a widely used nutritional sweetener, a mixture of glucose, fructose and minor amounts of other sugars. A study by Borges da Silva et al. investigated the production of HFS from glucose isomerization using reactive simulated moving bed technology, with the reversible reaction catalyzed by immobilized glucose isomerization. A new configuration for a simulated moving bed reactor is proposed for glucose isomerization.

*Source: Borges da Silva, EA; Ulson de Souza, AA; De Souza, SGU; Rodrigues, AE (2006). Analysis of the high-fructose syrup production using reactive SMB technology. Chemical Engineering Journal 118 (3) 167-181. +++*

