



# TEA AND SPICE, AND ALL THINGS NICE



Fresh and cured leaves and buds from the *Camellia sinensis* plant.

Tea is one of Asia Pacific's most traditional beverages and it is growing in popularity throughout the world to the point that it is now considered the most widely consumed beverage after water. This growth in demand is challenging tea producers to extract more tea, more flavor, and more of tea's healthy polyphenols.

Pepper is one of the world's most important spices and with India and Vietnam being the greatest pepper producing countries in the world, it is of little wonder that the spotlight is on both pepper quality and process improvements in this region.

## **Novozymes' solutions – Your cup of tea**

Tea is obtained and cured from the leaves and buds of the *Camellia sinensis* plant, and the popular drink itself is created when these leaves are combined with hot or boiling water. The most commonly found teas are black tea, oolong tea, green tea, and white tea; all are made from the same plants through different processes. But in a global culture increasingly focused on convenience products, "ready-to-drink" tea is a major growth market that is aided by the fact that the antioxidative compounds contained in tea are considered to be vital for healthy living. Two of the principal problems confronting ready-to-drink

tea manufacturers are the haziness that compromises the quality of the final product and reduced yields. Novozymes has an innovative solution that tackles both of these issues – the application of Viscozyme® L and Celluclast® 1.5 L.

Haziness in tea is caused by tea solids and although the cloudy appearance they bring to the beverage is undesirable, these solids also include tea phenols, the very powerful antioxidants that are considered to play a variety of roles in health maintenance and disease prevention. These phenols include catechins and theaflavins. One such catechin, epigallocatechin gallate, is considered to be more potent than vitamin E.

Rather than removing tea solids, Viscozyme L and Celluclast 1.5 L lend their unique attributes to solubilize a large proportion of these solids, thereby clarifying the final product and increasing yield. This also leaves a larger amount of the desired phenols in the tea, while ensuring the ready-to-drink tea is a clear, stable, and aesthetically pleasing beverage.

## **Perfecting pepper processing**

Pepper is one of the world's most loved spices, prized since early times for its flavor, and it is usually found next to salt on almost every dinner table. Pepper is derived from the fruit of the



Enzymatic processing enables Novozymes' customers in Asia to rethink their industries. Tea and white pepper are products of global significance and both developments could turn out to be an important business opportunity for both Novozymes and its customers in this region.

flowering vine from the *Piperaceae* family, and this fruit can be processed to become white, black, and green peppercorns. Powdered pepper is produced by additional grinding. White pepper is obtained from fully ripe pepper fruit berries – a lengthy process that involves soaking, removal of the outer hull, washing, and drying, whereas black pepper is produced by drying the green unripe berries. Novozymes' Peelzym® can considerably reduce white pepper processing time, saving vast amounts of water and energy, and improve its quality.

After the peppercorns undergo gentle crushing or abrasion to enable Peelzym to properly penetrate the skin, they are immersed in an enzyme bath. This milder mechanical treatment uses notably less energy and considerably less water for flushing, making enzymatic retting a more sustainable alternative. The pepper yield is larger because fewer peppercorns are damaged during this gentler process. Customer preferences are also sated; the shorter processing time means a reduction in off-flavors so the pungency and aroma of the final product are deepened, and the peppercorns are a more enticing, whiter color.

"Using Peelzym to improve pepper processing is a very new and exciting opportunity for customers in Asia," enthuses Helen Hu Ying, Regional

Marketing Manager for Food & Specialties. "It's truly a win-win application. Customers benefit from quicker and easier processing, consumers benefit from enhanced-quality pepper, and everyone benefits from the fact that it's a more environmentally friendly solution."

#### **Enzymatic processing – Supporting innovation in Asia**

With enzymes offering such substantial improvements to tea and white pepper processing as well as delivering enhanced qualitative aspects in the final products, the decision to adopt Novozymes' bioinnovations is not a difficult one for Asian food manufacturers. These benefits and improvements also add substance and rationale to the fact that the enzyme market has demonstrated continuous growth for the past few years.

And what about the future? Asian food companies are enjoying both an increase in the popularity of Asian cuisine globally and new export opportunities. The process and product-related benefits these food industries derive from enzymatic processing aids plus the enhanced sustainability, now rapidly growing in importance in Asia, means this exciting trend seems to be here to stay. ■

Enzymatically processed white pepper corns achieve a brighter white color.



**FOR MORE INFORMATION**  
Helen Hu Ying  
ynhu@novozymes.com