

Characteristics of anthocyanins in fortified cake: A possible potent inhibitor of lipase, α -glucosidase and sucrase

By Ms. Teo Ni Zhen



Abstract

Anthocyanins are natural flavonoids, responsible for the blue, red and purple colours of fruits, vegetables or grains. Anthocyanins have been incorporated as an ingredient of everyday foods, as they have been proven to prevent type 2 diabetes, cardiovascular diseases, neuronal health issues and even cancer. Black rice is a widely consumed grain in the east and has high levels of anthocyanins. As a grain cereal, it can be well incorporated into bakery products.

In this study, anthocyanin-rich black rice extract powder (ABREP) was incorporated into cakes, without significantly changing their physical properties and quality. The cake matrix provided a protection effect on the anthocyanins at 170°C baking temperature, protecting up to 83.5 ± 2.3 % of batter anthocyanins. Anthocyanins antioxidant effects were equivalent to 54.30 ± 0.34 mg of trolox and 227.16 ± 5.83 mg of ascorbic acid per 100 g fresh cakes at the highest fortification level of 2%. The in vitro rate of digestion of sucrose in the cake was reduced by up to 4.6 times while starch digestion rate was reduced by up to 2.5 times at 2% fortification. The cakes exhibited an inhibitory effect against sucrase at 10.87 ± 1.27 mg acarbose equivalent, against α -glucosidase at 1.41 ± 0.07 mg acarbose equivalent and against lipase at 2.17 ± 0.12 mg orlistat equivalent at 100 g fresh cakes for 2% fortification level. The results from this study provide an in-depth understanding on certain factors that can affect the level of detected anthocyanins and the possible gastrointestinal effects of anthocyanins-fortified food.

About the Speaker



Ms. Teo Ni Zhen was a masters' student at NUS and her masters' research focus was on the impact of anthocyanins on food structure and the possible health benefits it may render. Her interest is in the creation of processed food for the mass market and currently does R&D in Golden Bridge Foods Manufacturing Pte Ltd, a meat processing company that manufactures hams, luncheon meats, sausages and waxed sausages.

ALL ARE WELCOME !

Combined effects of inactivated yeast derivatives and yeast cells on the growth and survival of *Lactobacillus rhamnosus* HN001 in milk

By Mr. Toh Mingzhan

Abstract

The health benefits associated with consuming probiotic foods are contingent on the levels of viable beneficial microorganisms present in the product at the point of ingestion. It is therefore crucial that high numbers of live probiotics are attained in their delivery vehicles after manufacturing, and maintained until they are consumed. Previously, the addition of inactivated yeast derivatives (IYD) into milk was found to stimulate the growth of the probiotic bacterium, *Lactobacillus rhamnosus* HN001, during fermentation when it was used as the sole starter culture. However, IYD supplementation inadvertently enhanced post-acidification in the probiotic fermented milk when the product was stored under non-refrigerated conditions, thus accelerating the reduction of viable *L. rhamnosus* HN001 cells. Prior studies have demonstrated that the contemporaneous presence of yeasts and lactic acid bacteria in an acidic environment could improve the survival of the latter. Thus, it was hypothesised that the co-culturing *L. rhamnosus* HN001 and a yeast in fermented milk containing IYDs could improve the viability of the probiotic at ambient temperatures. In this seminar, the influence of a selected IYD (OptiWhite®), *S. cerevisiae* cells and their combination on the viability of *L. rhamnosus* HN001 in fermented milk, as well as the chemical components product will be presented.

About the Speaker



Mr. Toh Mingzhan is a research fellow in A/P Liu Shao Quan's research group at the NUS Food Science and Technology (FST) programme. He obtained his Bachelors of Applied Science (First Class Honours) in 2012, and completed his Ph.D study in the same programme in 2017. His doctoral research focussed on the impact of yeasts and their derivatives on the growth and survival of probiotic bacteria. He is currently involved in the development and commercialisation of probiotics-fermented functional beverages.

Host: Dr. Yang Hongshun **Date:** 20th Mar, 2018
Time: 12 to 1 pm **Venue:** Seminar Room S14-06-20