

NTU scientists use yeast to take waste out of waste oil

By **SAMANTHA BOH**

LOCAL scientists are harnessing oil-guzzling yeast to help get rid of waste oil, transforming it into an edible money spinner in the process.

Their method could help cut costs in the food and beverage industry – a sector notorious for wastage. It also provides a cheaper source of carotenoids, the substance which makes carrots orange, and a common food additive used in anything from butter to canned fruit, worth over a billion dollars worldwide.

“In the past, it was cheaper to throw the oil away than to convert it into something else,” said

Professor William Chen of Nanyang Technological University’s (NTU) School of Chemical and Biomedical Engineering, who led the research.

“But now, we’ve found a more cost-effective way to do so.”

He and his team studied a specific type of yeast called *Rhodospiridium toruloides*, which loves to eat the fatty acids in waste oil – oil that has been used, say for cooking, and in the process contaminated by impurities.

The scientists have now engineered the yeast strains to secrete carotenoids naturally.

Prof Chen believes that the new method – which involves simply adding the yeast to the oil

– could be used by restaurants which could then sell the carotenoids, which are in high demand, with a global market value of US\$1.2 billion (S\$1.6 billion) in 2010, according to global research group BCC Research.

Carotenoids are costly to produce now, because they have to be extracted and purified. Industry players are keen to get hold of the new technology, and two overseas companies, including a food and beverage giant, are in discussions with the NTU team.

The next step, said Prof Chen, is to engage industry players, to help them adapt their processes.

Mr Matthew Tan, chief risk and technology officer of abalone

producer Oceanus Group, feels the method is promising as it is environmentally friendly. His firm uses bacteria to treat waste water at its processing plants in China, but has not found a similar method for waste oil, which must be treated with harmful chemicals.

He said companies would like to move away from the use of substances such as chloroform and methanol to treat waste oil, because they are harmful to the ozone layer. Noting that climate change has led to a dip in marine harvests, he added: “We on the production side are seeing the drastic changes...We need to move towards greener processes.”

✉ samboh@sph.com.sg