



Breaking News on Food & Beverage Development - North America

‘Unknown’ cholesterol in processed food poses big heart health risk

By Stephen Daniells, 21-Aug-2009

With all the focus on LDL (bad) cholesterol, a ‘virtually unknown’ form called oxysterol may pose the biggest heart health threat, say Chinese scientists.

Scientists from the Chinese University of Hong Kong identified fried and processed food as the main sources of oxysterol in the diet, statements that may lead to louder calls to reformulate towards ‘healthier’ foods.

“Total cholesterol, low-density lipoprotein cholesterol (LDL), and the heart-healthy high-density lipoprotein cholesterol (HDL) are still important health issues,” said lead researcher Zhen-Yu Chen, PhD.

“Our work demonstrated that oxysterol boosts total cholesterol levels and promotes atherosclerosis [“hardening of the arteries”] more than non-oxidized cholesterol.”

Sources

In an email communication with FoodNavigator, Dr Chen said: *“Foods of animal origins contain cholesterol, which is stable at room temperature. However, it is susceptible to oxidation to produce the cholesterol oxidation products during heating, particularly, long frying and high temperature.”*

“The amount of cholesterol consumed from diet is about 300-500 mg cholesterol per day per person while cholesterol oxidation products could reach up to 10 per cent total cholesterol in diet.”

Oxysterol is produced in oxidised oils, particularly in the much-maligned trans-fatty acids and partially-hydrogenated vegetable oils. Health concerns, and the subsequent consumer reaction, have led many manufacturers to begin reformulating their products and reduce the trans-fat content, or eliminate it completely.

Detrimental effects of oxysterol have been on the researchers’ radars for a while, with the focus on cell and DNA damage, and its biochemical effects in contributing to atherosclerosis, said Dr Chen. According to the Hong Kong-based researchers, theirs is one of the first studies on oxysterol’s effects in raising blood cholesterol levels, compared to non-oxidized cholesterol.

Study details

According to findings presented at this week’s 238th National Meeting of the American Chemical Society, hamsters fed a diet high in oxysterol displayed blood cholesterol increases of up to 22 per cent more than hamsters eating non-oxidized cholesterol.

The oxysterol-fed group also showed greater deposition of cholesterol in the lining of their arteries and a tendency to develop larger deposits of cholesterol, called atherosclerotic plaques.

Diet vs pills

Chen noted that scientists do not know whether statins can lower oxysterol. *“Statin is a type of drug which decreases cholesterol synthesis and thus decreases the cholesterol in blood,”* he said. *“Oxidized cholesterol is mainly from diet and statin should not have effect on oxidized cholesterol in blood but it needs to be proved.”*

Consuming foods rich in antioxidants may be a way of countering these effects, said Chen, since these substances may block the oxidation process that forms oxysterol.

There may a potential for dietary approaches said the researcher, such as phytosterols and phytosterols. *“Phytosterols decreases blood cholesterol by a simple mechanism of decreasing cholesterol absorption,”* said Chen. This could lead to greater excretion of oxysterol.

The study was funded by the Hong Kong Grant Research Council.

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