

SNIPPETS

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DRAMATIC TRANSFORMATION: RESEARCHERS DIRECTLY TURN MOUSE SKIN CELLS INTO NEURONS, SKIPPING IPS STAGE

Even Superman needed to retire to a phone booth for a quick change. But now scientists at the Stanford University School of Medicine have succeeded in the ultimate switch: transforming mouse skin cells in a laboratory dish directly into functional nerve cells with the application of just three genes. The cells make the change without first becoming a pluripotent type of stem cell — a step long thought to be required for cells to acquire new identities.

The finding could revolutionize the future of human stem cell therapy and recast our understanding of how cells choose and maintain their specialties in the body. *Stanford School of Medicine* 27 Jan. 2010.

<http://med.stanford.edu/ism/2010/january/wernig.html>

DIFFERENTIATION HOLDS THE KEY TO ANTIOXIDANT SUCCESS:

An interview with Professor Jeffrey Blumberg, director of the Antioxidants Research Laboratory at Tufts University in Boston.

“The issue that I have is that we’re talking about thousands of different compounds with wildly different chemical structures, but they’re covered by one term. And that term implies one mechanism of action,” says Prof Blumberg.

“It’s simplification that could get us into trouble.” Definitions are important, and an antioxidant, strictly speaking, is a “substance (as beta-carotene or vitamin C) that inhibits oxidation or reactions promoted by oxygen, peroxides, or free radicals”. And with this definition in mind, Prof Blumberg asks what would happen when a consumer hears that an antioxidant does not actually have an antioxidant effect in vivo. What if the effects were actually a change in phase 2 metabolism, or anti-inflammatory, or an apoptosis effect?

The use of the term antioxidant continues to grow, however, and attempts by marketers to up their claims are drawing on results from tests of ‘antioxidant activity’. Products are beginning to

emphasise ORAC values on labels. The issue of antioxidant assays is controversial – some people emphasise the importance of a measure, while other say such results should be taken with the proverbial pinch of salt.

To rely on assays that measure ‘total antioxidant capacity’ is problematic, said Prof Blumberg. To rely on one test above all others, as some appear to be doing with ORAC, suggests that there is one simple over-arching way of characterising these molecules.

“That’s not fair,” said Prof Blumberg. “It’s misleading marketing.”

A recent paper in the *Nutrition Journal* by Monica Carlsen *et al.* from the University of Oslo, for example, sought to establish the most comprehensive database of the antioxidant content of over 3,000 food products. The researchers chose to use the FRAP assay because they considered it simple, fast, and inexpensive. In agreement with previous attempts to put foods in antioxidant league tables, the Carlsen study found that spices and herbs topped the list, followed by berries, fruits, nuts, and chocolate.

In an interesting caveat, Carlsen and her co-workers note that “it is not likely that all antioxidant-rich foods are good sources and that all antioxidants provided in the diet are bioactive”, and also mention that the bioactivity of many of these antioxidants “are not necessarily correlated with their antioxidant capacity”.

NUTRAingredients.com 18-Feb-2010

SATURATED FATS NOT LINKED TO HEART DISEASE: META-ANALYSIS

Dietary intakes of saturated fats are not linked to cardiovascular disease, so says a meta-analysis of 21 studies from across the world.

Data from almost 350,000 subjects obtained from 21 studies indicated that dietary intakes of saturated fat are not associated with increases in the risk of either coronary heart disease (CHD) or cardiovascular disease (CVD), US researchers report in the *American Journal of Clinical Nutrition*.

“Our meta-analysis showed that there is insufficient evidence from prospective epidemiologic studies to conclude that dietary saturated fat is associated with an increased risk of CHD, stroke, or CVD,” wrote the researchers, led by Dr Ronald Krauss from the Children’s Hospital Oakland Research Institute in California. “[However,] nutritional epidemiologic studies provide only one category of evidence for evaluating the relation of saturated fat intake to risk for CHD, stroke, and CVD. An overall assessment requires consideration of results of clinical trials as well as information regarding the effects of saturated fat on underlying disease mechanisms,” they added.

The study, funded by the US National Dairy Council, Unilever, and the National Institutes of Health, challenges the widely supported theory that saturated fats are detrimental to heart health. The UK's Food Standards Agency (FSA) has previously stated that if people cut their saturated fat intake to government recommendations it could prevent up to 3,500 premature deaths a year, saving the UK economy more than £1bn a year in related costs. Such estimates have led to public awareness campaigns in the UK, including a £3.5m advertising campaign to encourage consumers to reduce their intake of saturated fat and change the way they shop and eat. Commenting on the new meta-analysis, a spokesperson for the FSA told FoodNavigator that the meta-analysis does not challenge the Agency's saturated fat campaign.

"The Agency recognises that there is evidence to support an indirect link between saturated fat intake and increased LDL cholesterol, which may lead to increased risk of CHD. This is in line with World Health Organization and other eminent health bodies," said the spokesperson.

"The meta-analysis of prospective cohort studies should be interpreted with caution, as these type of studies are subject to bias and confounding, which may affect the results. Although this meta-analysis reports no association between saturated fat intake and CVD, other recently published combined analyses have found that replacing saturated fat with unsaturated fat, particularly polyunsaturated fat reduces the risk of CVD," they added.

The spokesperson added that the agency will continue to recommend a reduction in saturated fat intake as part of a healthy balanced diet. *FOODnavigator.com 12 February 2010*

RYE BEATS LAXATIVES FOR CONSTIPATION RELIEF: STUDY

Consumption of fibre-rich rye bread may ease constipation and outperform commercial laxatives, according to a new study from Finland.

Writing in the *Journal of Nutrition*, researchers from the University of Helsinki report that whole-grain rye bread performed better than laxatives and white wheat bread in the easing of symptoms of constipation, a condition reported to affect up to 27 per cent of the population of Western countries, according to the researchers.

"To the best of our knowledge, this study is the first to evaluate the effects of rye bread in treating constipation as compared with laxatives and to simultaneously investigate the changes in the colonic metabolism," wrote the researchers, led by Reetta Holma.

The beneficial effects of rye were put down to its fibre content, which could be fermented by bacteria in the colon, and lead to an increase in colonic short chain fatty acids (SCFA).

"Arabinoxylan, which is abundant in rye, appears to be a preferred substrate for fermentative generation of SCFA," noted the researchers. "SCFA may induce propulsive contractions, leading to accelerated transit and relief of constipation.

"The decrease in fecal pH caused by rye bread consumption, which was found in the present study, is

a natural consequence of increased fecal SCFA and also decreased intestinal transit time. The importance of maintaining a slightly acidic environment is critical, because the majority of harmful bacterial enzymes operate optimally at a neutral to slightly basic pH," they added. *NUTRAingredients.com 12-Feb-2010*

PHOSPHATE CONTRIBUTION TO OSTEOPOROSIS

Dietary phosphate is supplied through meat, grains and dairy products, and increasingly as food additives. Phosphate is a fundamental mineral component of hydroxyapatite, the main structural element of bone. However, the acid-ash hypothesis postulates that dietary phosphate, a marker of the metabolic production of acid, is detrimental to bone.

A study by Fenton et al. used a meta-analysis to quantify the potential contribution of phosphate to bone loss in 269 healthy adults, determined by surrogate and direct measures of osteoporosis. The influence of calcium intake and degree of protonation of the phosphate supplements on urine calcium, calcium balance and markers of bone metabolism was assessed. The results contradicted the acid-ash hypothesis, with higher phosphate intakes being associated with decreased urine calcium and increased calcium retention. No evidence was found that higher phosphate intakes contributed to bone demineralization and were detrimental to bone health. Fenton, TR; Lyon, AW; Eliasziw, M; Tough, SC; Hanley, DA (2009).

Phosphate decreases urine calcium and increases calcium balance: a meta-analysis of the osteoporosis acid-ash hypothesis. *Nutrition Journal* 8 (Sept.) 15 pp. foodsciencecentral@foodsciencecentral.com Update 176

CAN CHOCOLATE LOWER THE RISK OF A STROKE?

According to a study to be presented at the American Academy of Neurology's 62nd Annual Meeting in Toronto, Canada from April 10-17, 2010, eating chocolate may lower your risk of having a stroke. Another study found that eating chocolate may lower the risk of death after suffering a stroke. The analysis involved reviewing three studies on chocolate and stroke.

"More research is needed" said study author Sarah Sahib, at McMaster University in Hamilton, Ontario, Canada.

Chocolate is rich in antioxidants called flavonoids, which may have a protective effect against stroke, but more research is needed. The first study found that 44,489 people who ate one serving of chocolate per week were 22% less likely to have a stroke than people who ate no chocolate. The second study found that 1,169 people who ate 50 g of chocolate once a week were 46% less likely to die following a stroke than people who did not eat chocolate. *IFT Weekly Newsletter 17 Feb. 2010*

Snippets - contributions are welcome. Edited and produced by Dr. B Cole. – drcole@cybersmart.co.za / Fx 011 660 6444 with the help of the Northern Branch Committee.

