Powerful antioxidant resveratrol prevents metabolic syndrome in lab tests: study

September 2 2011

Researchers in the Faculty of Medicine & Dentistry at the University of Alberta have discovered that resveratrol, a powerful antioxidant found in common foods, prevents a syndrome in some offspring that could lead to later health issues such as diabetes.

Resveratrol is found in fruits, nuts and red wine, and has been shown to extend the lifespan of many species.

Human offspring that have trouble growing in the womb have an increased risk of developing metabolic problems later in life. But U of A medical researchers Jason Dyck and Sandra Davidge and their teams found that administering resveratrol to the young offspring of lab rats after weaning actually prevented the development of a metabolic syndrome, which is characterized by glucose intolerance, insulin resistance and higher deposits of abdominal fat.

Dyck and Davidge published their findings in a recent edition of the peer-reviewed journal *Diabetes*. Dyck is a researcher in the departments of Pediatrics and Pharmacology, while Davidge is a researcher in the departments of Obstetrics & Gynecology and Physiology. Both are also members of the Mazankowski Alberta Heart Institute, as well as the Women and Children's Health Research Institute. Dyck and Davidge were co-senior authors of the study.

The study took advantage of the fact that "infancy is a potential window of opportunity to intervene and prevent the future development of

metabolic diseases." The researchers noted this is the first potential pharmacological treatment that may help babies that developed in a growth-restricted environment in the womb.

"There is a concept that in utero, there are genetic shifts that are occurring – reprogramming is occurring because of this strenuous environment babies are in, that allows them to recover very quickly after birth," says Dyck.

"When babies are growth-restricted, they usually have a catch-up period after they are born where they catch up to non-growth-restricted groups. It might be that reprogramming that creates this kind of 'thrifty' phenotype, where they want to consume and store and get caught up.

"That reprogramming appears to make them more vulnerable to developing a host of metabolic problems."

Earlier this year, Dyck and Davidge published another paper in Diabetes demonstrating that rat offspring not growing well in the womb had noticeable side effects from high-fat diets after birth – the rats deposited more fat in the abdominal area, developed glucose intolerance, more dramatic cases of insulin resistance and insulin resistance at earlier stages of life.

Dyck and Davidge are continuing their research in this area, examining whether treating the mother during pregnancy can prevent metabolic problems in rat offspring affected by intrauterine growth restriction.

Davidge is an Alberta Innovates-Health Solutions (AIHS) Scientist and a Canada Research Chair in Women's Cardiovascular Health. Dyck is an AIHS Senior Scholar and the Director of the Cardiovascular Research Centre at the U of A.

Provided by University of Alberta