



**Good food  
is good  
medicine!**

**The University of Guelph – Canada’s food university – is committed to improving Canadians’ health and quality of life through innovative agri-food research and development.**

**F**or the first time ever, there are now more Canadians over 65 years of age than 14 and under. Research-based advances in medicine and health care have allowed us to live longer, and the quality of our longer lives can be enhanced by making good food choices.

Good food in Ontario starts with Ontario farmers. Through a long-standing research agreement, the University of Guelph and the Ontario Ministry of Agriculture, Food and Rural Affairs create knowledge about the links among agriculture, food and health.

U of G researchers address nutrition-related aspects of chronic diseases, such as heart disease, cancer, diabetes and osteoporosis.

They’re investigating the preventive power of certain foods and their bioactive components. And they’re looking at how habits that start in childhood can improve lifelong health.

Researchers have found ways to enrich basic commodities and processed foods with bioactive ingredients to create healthier foods, such as fortified dairy products, bagels and granola bars. They’ve discovered links between nutrients and diseases, such as how omega-3 fats affect breast cancer and the effect of choline on fatty liver disease.

All this, while maintaining traditional Guelph values of local food production and environmental sustainability.



**The power of purple in staving off chronic disease**

PAGE 2



**Better Bagels target the risk of Type 2 diabetes**

PAGE 3



**Food that fights obesity: choline’s unsung story**

PAGE 4



### A new understanding of osteoarthritis pain

University of Guelph-grown mint tea, rich in rosmarinic acid, may reduce osteoarthritis (OA) pain and improve quality of life. One in 10 Canadians already suffers from OA, and prevalence may increase given our aging population. Researchers found that OA pain is due to the brain's altered perception of pain signals, which ultimately increases the intensity and duration of pain. Intriguingly, during a human clinical trial, OA patients experienced less pain after drinking the mint tea.

### Vitamin D shows potential as natural chemotherapy

Vitamin D is known to be essential for strong bones, but it may also strengthen the fight against breast cancer. Researchers showed that breast cancer cells are even more sensitive to the anti-cancer actions of this nutrient when the “gate-keeper” of vitamin D signalling in the cell, a protein called MARRS, is disabled. Since MARRS is found in many cell types, this research may help in treating other age-related conditions, including Alzheimer's disease.

### Pureed foods with improved taste, texture, look and smell

Elderly people in long-term care homes who have difficulty swallowing need not settle for bland purees. Researchers are working to create nutritious and delicious options using local agri-food. They aim to improve the nutrient composition of purees without sacrificing their taste, texture, look and smell to promote healthy aging and enhance quality of life.

### The power of purple

Purple fruits and vegetables owe their colour to antioxidants called anthocyanins, which researchers suggest may benefit Canadians at risk of, or already diagnosed with, age-related chronic diseases. Now researchers are investigating the power of purple in wheat. The feasible and sustainable purple wheat crop may benefit farmers and consumers. But first, researchers are testing the body's ability to absorb anthocyanins from purple wheat products, including a granola bar and crackers.



### Food fights against incurable disease symptoms

A unique variety of asparagus developed at the University of Guelph might one day alleviate symptoms of inflammatory bowel disease (IBD), for which the cause and cure are unknown. Researchers engineered asparagus containing more rutin, an antioxidant. When tested in mice, the rutin-rich asparagus reduced bowel inflammation during an IBD relapse and shortened recovery time more than a rutin supplement, emphasizing the benefit of consuming whole foods.

### Modified milk products for personalized nutrition

Milk is already nutritious and delicious. Researchers are testing modified milk products intended to further improve consumer health while expanding the Canadian dairy manufacturing industry. The milk products contain different amounts of the bioactive ingredients casein and whey, which the researchers predict will improve consumers' blood glucose response and enhance feeling of fullness, ultimately reducing their risk of obesity and Type 2 diabetes.



## New technique develops cost-effective antioxidant super soups

A new technique improves soup nutrition while minimizing the financial and environmental costs of soup manufacturing. Researchers developed a method to return vegetable antioxidants that help to prevent diseases, such as cancer and Type 2 diabetes, into soups. These antioxidants come from the byproducts of soup processing that would otherwise be thrown out as waste.



## Firming up a fine source of fibre

Dietary fibre helps with digestion and blood sugar control, which may decrease the risk of Type 2 diabetes. However, its texture is unappealing in some popular foods, such as pasta and desserts. Researchers are working to produce fibre-rich whole-wheat pasta with the firmness of fibreless white pasta, and to incorporate soluble fibre from flaxseeds (of which Canada is the top grower worldwide) into yogurts and puddings.



## Love lentils and lower your Type 2 diabetes risk

A typical Canadian diet includes potatoes or white rice instead of lentils, even though Canada is a huge producer of the latter. But here's another reason to love lentils: they may reduce Type 2 diabetes risk by blunting post-meal blood sugar spikes. Researchers are investigating whether replacing half a serving of potatoes or white rice with lentils will improve blood sugar levels. The study results may support a health claim, providing incentive for more Canadians to love lentils.



## Agri-foods for healthy aging

A new educational recipe resource supports Ontario agriculture in improving aging adults' health. Researchers worked with Agri-food for Healthy Aging, farmers and older adults to develop 52 nutritious recipes using Ontario-grown ingredients with proven health benefits. The recipes also include nutrition information for healthy aging, cooking tips, farm facts and stakeholder testimonials.

## Better Bagels target the risk of Type 2 diabetes

People prone to Type 2 diabetes may find that "Better Bagels" are a solution for better health. Better Bagels are made from corn developed by the University of Guelph to be high in resistant starch, which may slow down sugar absorption into the blood. That's a critical factor in lowering diabetes risk. Researchers are working with Canada Bread on a human clinical trial to learn whether eating Better Bagels regularly could help prevent diabetes.



## Better dietary information for pregnant women

Pregnant women risk increasing their sugar intake by yielding to cravings and by drinking sweetened beverages to combat morning sickness or as an alternative to alcohol. However, the health consequences are not known. By investigating links between higher sugar consumption and pregnancy problems such as gestational diabetes, high blood pressure and early or late deliveries, researchers hope to improve dietary recommendations for mothers-to-be.



## Food that fights obesity: the unsung story of choline

More than one million Canadians have fatty liver disease, and obesity is to blame for the majority of cases. Liver cells low in choline, an essential micronutrient, accumulate fat. So, researchers are investigating how choline supplementation can reverse fatty liver disease in hopes of promoting Canadian consumption of foods rich in choline, such as eggs, soy and spinach.

## Guelph Family Health Study tackles childhood obesity

One in three Canadian children is overweight or obese, and an interdisciplinary team of researchers says the solution to this problem may be a family affair. They started the Guelph Family Health Study to help 3,000 Guelph families develop and maintain healthy eating and exercise habits over the next 20 years. The researchers hope that developing healthy behaviours while young will reduce children's risk of obesity and chronic disease as they age.

## Fish oil may improve quality of life

Fish oil may protect against weight gain and immobility by increasing calories burned at rest, and from stored fat in particular. Researchers are investigating the effects of fish oil supplements, rich in omega-3 fats, on the aging body's strength, ratio of fat to muscle mass and ability to burn fat. They hope to prolong independence and quality of life for older people.

## Lifelong investment in omega-3s to prevent breast cancer

Lifelong consumption of omega-3 fats may help to prevent breast cancer, the second leading cause of cancer-related deaths in Canada. Researchers showed that feeding mice a diet rich in omega-3 fats, starting even before birth, decreased the number and size of breast tumours in adult mice. Researchers suggest that what we eat when we're young influences our health as we age.

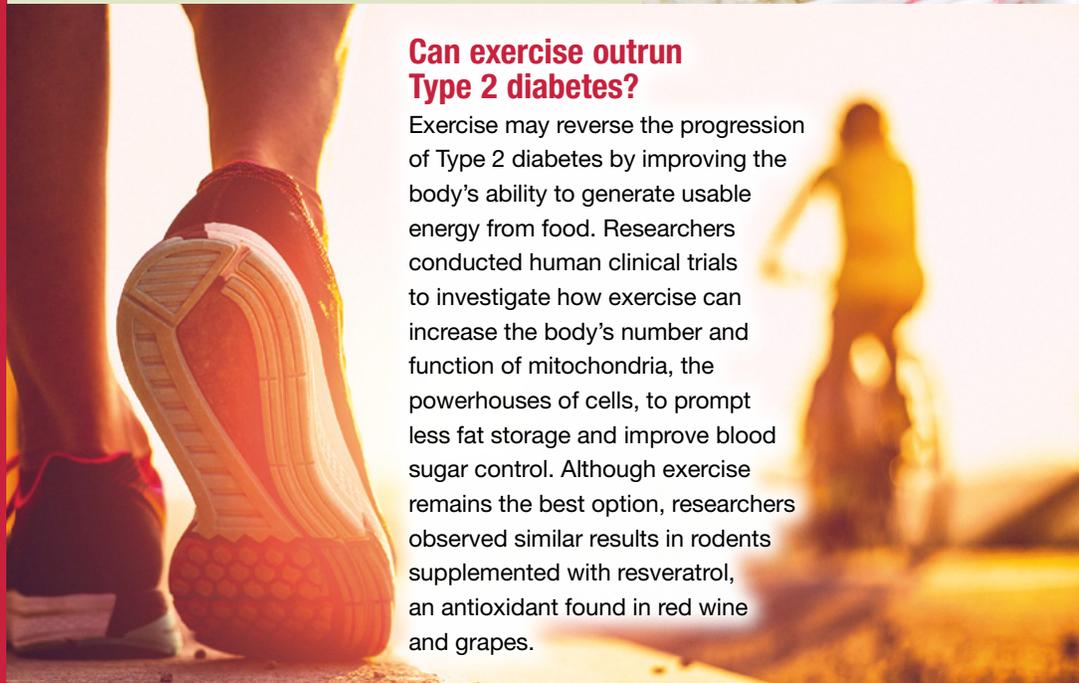
## Oats' role in Type 2 diabetes prevention

Canada is the world's largest exporter of oats, which contain  $\beta$ -glucan, a soluble fibre with heart-healthy, cholesterol-lowering abilities. During a human clinical trial, researchers showed that this fibre may also prevent Type 2 diabetes by stabilizing post-meal blood sugar levels. The researchers say that such promising results will further justify the promotion of products such as cereals with  $\beta$ -glucan to improve Canadians' health.



## Can exercise outrun Type 2 diabetes?

Exercise may reverse the progression of Type 2 diabetes by improving the body's ability to generate usable energy from food. Researchers conducted human clinical trials to investigate how exercise can increase the body's number and function of mitochondria, the powerhouses of cells, to prompt less fat storage and improve blood sugar control. Although exercise remains the best option, researchers observed similar results in rodents supplemented with resveratrol, an antioxidant found in red wine and grapes.



These pages highlight the University of Guelph's research in the departments of Human Health and Nutritional Sciences, Food Science, and Family Relations and Applied Nutrition, and in collaboration with Agriculture and Agri-Food Canada. For more information on any of these stories, contact [lsnyder@uoguelph.ca](mailto:lsnyder@uoguelph.ca).