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The **business address** of the Salt Skip Program is Queensland Hypertension Association
PO Box 193, Holland Park, QLD 4121, Fax (07) 3394 7815.

Use the **editorial address** when writing about the newsletter—see the panel on page 4.

Virtual Mouth Technology ~ *science of chewing to combat the rise of diet-related diseases*

Our favourite everyday processed foods could taste just as good but be healthier in future, thanks to our virtual mouth technology that is revealing the science of chewing.

The Challenge: Salt, sugar and saturated fat

Around 80% of our daily diet is foods that are processed to some degree. Eating too many foods that are high in salt, sugar and saturated fat is leading to a rise in diet-related diseases in many countries, including Australia.



Picture: Dr Simon Harrison and virtual mouth
CSIRO biomechanical engineer and computer modeller, Dr Simon Harrison, said the world's first 3D dynamic virtual mouth can provide detailed insight for developing healthier foods that are lower in salt, sugar and saturated fat but with the same or similar taste.

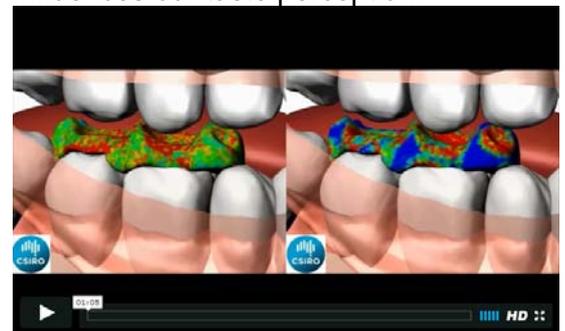
Skip the Salt

"In polite company, we can't see inside someone's mouth while they're eating and, until now, it has not been possible to view how the chewing process alters food," Dr Harrison said.

Our Response: The science of chewing
Using a cutting-edge technique called smooth particle hydrodynamics, CSIRO scientists developed a virtual mouth built on real data about the physics of chewing. It predicts how a particular food breaks down and how flavour is released in the mouth. It also shows the distribution and interaction of components such as salt, sugar and fat.

Adult average: 32 Teeth

With this technology, scientists can view and analyse how food at the microscopic level works in the mouth, and how it influences our taste perception.



Watch Virtual Mouth chewing chocolates:
<http://www.csiro.au/en/Research/FNF/Areas/Food/Making-healthier-foods/Virtual-mouth>

Virtual Mouth Technology– Cont.

The Results: Developing healthier processed foods

CSIRO's 3D mastication modelling is starting to provide researchers with new understanding of how to reduce salt, sugar and fat in food products, as well as how to incorporate more fibre and nutrients, and even how to create new food sensations.

This new data and understanding is helping to develop foods lower in salt, sugar and fat without changing the taste.

The benefits for the food industry could be significant.

The technology can give food and ingredient manufacturers the ability not only to model the breakdown of a complex food product, but also the individual components. It can also model the costs of making changes to a product, and then calculate the cost benefit. This will save time and money, compared to using the traditional 'cook and look' approach that is often needed to make changes to food products.

CSIRO's research should also help create new taste sensations that could find their way into new foods on our supermarket shelves.

Source: CSIRO

List of No Salt Foods

If you have high blood pressure or heart problems, your doctor has probably recommended that you reduce how much salt you eat each day, and knowing what foods are salt-free can help you accomplish that goal. A sodium-free food is defined as any food that contains less than 5 milligrams of sodium per serving; these foods are virtually salt-free.

Fruit

Fruit is a nutritious addition to any diet because fruit supplies key nutrients, such as fibre and vitamin A, that are necessary for good health. Most fresh fruits are salt-free, as well, making them a healthy choice if you're trying to cut your salt intake.

A 1-cup serving of canned peaches or pears, for example, contains 4 milligrams of sodium, which translates to 0.002 teaspoon of salt, which is just a couple of grains.



A serving of fresh apricots, watermelon or raspberries contains 3 milligrams of sodium, and a serving of most fruit juices, mangoes, tangerines, strawberries, pineapple or bananas offers just 2 milligrams of sodium. Blueberries, blackberries, apples, prunes, dates, oranges, nectarines, grapefruit and cherries are salt-free as well.

Vegetables

Vegetables supply nutrients, fibre and potassium, and most varieties are salt-free. A serving of hot chili peppers, cauliflower, snap yellow beans, green bell peppers or mushrooms contains 4 milligrams of sodium, and a serving of broccoli, cooked onions, lettuce, sweet peppers or corn contains 3 milligrams of sodium. Fresh squash, radishes, eggplant, asparagus, tomatoes and avocados are all salt-free.

Grains and Legumes

Soaking and cooking dried beans is the salt-free option. Most cooked pasta, in dried form, is salt-free. Lentils, rice, oat bran, wheat flour and plain air-popped popcorn are additional grains and legumes that are salt-free.

A Few More Salt-Free Foods

Fresh herbs - basil, dill, rosemary, parsley and oregano, are salt-free, as are certain dried spices - black pepper, garlic powder, cumin, paprika, nutmeg, cinnamon and cayenne pepper. Cooking oils - olive, canola, soybean, peanut and sunflower, are salt-free as well. Unsalted raw nuts don't contain added salt either. Vinegars, most alcoholic beverages and plain coffee and tea are also salt-free foods.

Reducing the sodium content of packaged foods: How does Canada measure up?

In 2010, as part of a national sodium reduction strategy, a multi-stakeholder working group published Canada's Sodium Reduction Strategy. This strategy was meant to act as an essential public health intervention to address the high levels of sodium currently in the Canadian diet, which causes high blood pressure and increases risk for stroke and heart disease.



The interim goal was to reduce the average sodium consumption of Canadians to 2,300 mg/day by 2016. To achieve this, the Strategy recommended initiatives directed at the food supply, education and awareness, and research initiatives. Reducing sodium in packaged foods is a key component of the strategy, since the majority of Canadians receive most dietary sodium from packaged and processed foods. New research published in April 2016 in *Applied Physiology, Nutrition, and Metabolism* (APNM) shows that as of 2013, 84% of packaged foods had little or no sodium reduction.

The data from the research undertaken at the University of Toronto and published in APNM is the first evaluation of Canada's voluntary approach to sodium reduction in packaged foods. It is also one of the largest comprehensive assessments of changes to sodium levels globally. "Our evaluation is an essential component of assessing how well our food industry is performing in terms of sodium reduction. This work is especially crucial in the absence of any federal or provincial sodium-monitoring program; to date Health Canada has not published any interim reports on how the industry is doing, which is in large part why we did this study," says Dr. Mary L'Abbé, Professor and Chair,

Department of Nutritional Sciences at the University of Toronto. "Many Canadians do not know where the excess sodium in their diet is coming from and the food industry has a lot of progress to make to meet the proposed benchmark target of a 25-30% overall sodium reduction by 2016."

The study found that some packaged food categories had made excellent progress in reducing sodium levels. The greatest reductions in sodium levels occurred in imitation seafood, breakfast cereals, canned vegetables/legumes, plain chips, hot cereals, meat analogues, canned condensed soup, and sausages and wieners. "Despite reductions in these select food categories, our research shows that 84% of food categories have had little or no change between 2010 and 2013, with some food categories that are high in sodium showing very little progress, specifically pantry breads and packaged deli meats, which are foods that contribute the most sodium to Canadians' diets" continued Dr. L'Abbé.

The data found in the study further raises the question of the effectiveness and sustainability of a voluntary approach to reducing sodium levels in packaged foods in the absence of other complementary policies or programs. In comparison, the success of voluntary trans-fat reduction in the Canadian food supply is largely attributable to Health Canada's Trans Fat Monitoring Program which included planned, periodic analysis and public reporting of the trans-fat content in foods. A recent assessment found that 97% of Canadian packaged and restaurant foods fell within the recommended trans-fat limits. "At this point, the minor change in sodium levels in the food supply will likely have minimal impact on the overall sodium intake of Canadians," says Dr. JoAnne Arcand, Assistant Professor at the University of Ontario, Institute of Technology. "This means that Canadians will need to continue to mindfully choose lower sodium products in order to reduce their sodium consumption" continued Dr. Arcand. "This minimal change should also trigger the government to consider combining other types of policies levers with their voluntary approach to sodium reduction, such as a planned, periodic public monitoring program, like the one implemented to reduce trans-fat, and regulatory approaches if that is ineffective." **Source: *Applied Physiology, Nutrition & Metabolism***

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Salt Skip Program
editorial address:
Malcolm Riley
47 Coburg Rd,
Atherton SA 5014

Email:

Malcolm.Riley@csiro.au

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It's in the bag... Dinner for 2



Ingredients

- 1 Regular size Glad oven bag and twister
- Generous drizzle of olive oil
- 2 small brown onions, peeled
- 2 lamb chops or small rack of lamb
- 2 portions sweet potato, unpeeled
- 1 medium potato, cut in half lengthwise, unpeeled
- 2 pieces pumpkin, skin on
- Wilted greens to serve
- Homemade mint sauce, mustard and gravy to serve (mix own mustard powder with water, gravy would need to be stock and salt free)

Method

Using an oven proof glass or Pyrex baking dish, put bag into the dish and place onions into the bag closest to heat side of the oven, followed by lamb supported by sweet potatoes and potatoes. Place pumpkin skin side down and splash olive oil generously over meat and vegetables, particularly over the onions. Seal the bag tightly with the bag tie twister and cook on 220 degrees for 40 minutes and check to see if last 5 minutes should be on reduced heat.

Wilt greens in saucepan with a lid. Place greens (beetroot tops, chard, Asian greens or beans and broccoli) in saucepan, either cook with a very small amount of water or a combination of a waiver of sesame oil and the water the greens have been rinsed in.

Pierce bag carefully, serve and enjoy dinner for 2.

At Salt Skip News, we are always interested to hear from readers. Please send us your Salt Skip news, tips and salt-free or low sodium recipes...

BP Monitor with Salt Skip News is published every 2 months, from February to December (6 issues a year). This newsletter is not a substitute for health and medical advice. Readers should always seek the advice of a qualified health professional regarding their health or a medical condition.

Salt Skip Editorial Committee: Prof Michael Stowasser (Director, Hypertension Unit, University of Qld School of Medicine, Princess Alexandra Hospital, Brisbane), RN Cynthia Kogovsek (Hypertension Nurse, Hypertension Unit, Greenslopes Private Hospital, Brisbane), Prof Caryl Nowson (Nutrition & Ageing, Deakin University, Melbourne), Jane Brown (Home Economist, Salt Skip Program, Hobart), and Dr Jennifer Keogh (Dietitian, Australian Institute of Weight Control, Adelaide). Text drafted (edited where other authors are named) by Dr Malcolm Riley, Nutrition Epidemiologist, CSIRO. Printed by Snap Printing, Felix Street, Brisbane.