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Canada's Action Plan to Reduce the Level of Sodium in Processed Foods

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In Canada, one of the most important risk factors for strokes and Cardio Vascular Disease (CVD) is related to the high levels of sodium intake. High consumption of sodium has been linked to incidences of high blood pressure in a dose-related response. Also, high blood pressure and its impact in CVD is the leading cause of death, disability and health expenses of this nation. In addition to that risk, there are possible associations between excessive levels of sodium intake and the higher risk of stomach cancer, osteoporosis and the increased severity of asthma [(1)].

Health Canada is concerned about this situation. In 2004, Statistics Canada conducted the Canadian Community Health Survey[(2)] designed to collect information about the food and nutrient intake of the Canadian consumers. This survey excluded members of the regular Canadian Forces, residents (military and civilian) of Canadian Forces bases, residents of the three territories and people living on Native's reserves, in institutions, or in some remote areas.

A total of 35,107 people completed an initial 24-hour dietary recall. A sub-sample of 10,786 people completed a second recall 3 to 10 days later. The level of response rates were 76.5% and 72.8%, respectively. A number of invalid and "null" recalls were excluded from the responses, as were records for breastfeeding children and for children of less than one year old of age. The bootstrap method, which takes into account the complex survey design, was used to estimate standard errors, coefficients of variation and confidence intervals. The significance level was set at $p < 0.05$[(2)].

The Tolerable Upper Intake Level (UL) for sodium set by the Institute of Medicine of the National Academies (IOM) for people aged 14 and over should be at or below 2,300 mg of sodium per day. This is the highest intake recommended level to reduce risks of high blood pressure. Adequate Intakes (AIs) for people aged one year and over, range between 1,000 mg/day and 1,500 mg/day[(2)].

Unfortunately, the results of the 2004 survey confirmed that the majority of Canadians consume more than the recommended daily intake of 1,200 to 1,500 mg per day for most adults and above the upper limit of 2,300 mg per person per day. In fact, among people aged 9 to 70, over 85% of men, and over 60% of women had sodium intakes exceeding the Tolerable Upper Intake Level (UL). Similar high intakes are seen in young children: 77% of children aged 1 to 3, and 93% of the children aged 4 to 8 exceed the UL for sodium intake levels. However, what is alarming is that actual level of sodium intake is estimated to be even higher than what is shown in the survey because the self-reported dietary recall method used on this survey normally underestimates the real intake level. It is then evident that a large majority of Canadians are consuming high levels of sodium from commercially prepared foods with increased risks of experiencing high blood pressure and adverse health effects.

Medical research has shown that a reduction of sodium intake by 1,800 mg per day could decrease the prevalence of hypertension by 30% reducing the use of medication for approximately one million individuals with direct cost savings of approximately $430 million dollars[(1)].

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There is the urgent need to increase the level of understanding of this problem; another report is expected to be released in March 2010. This research on the public opinion about sodium intake focused on 15 groups and 1,218 adults (18 years of age and older) who participated in a telephone survey to understand the views of Canadians about sodium information of food labels, sodium consumption, priorities and expectations regarding sodium reduction intake levels[1].

To respond to this issue, the Government of Canada created the Sodium Working Group (SWG), a multi disciplinary group with representatives from the Government, the Academia, the Scientific and Health-Professional Community, Health-Focused and Consumer Non-Governmental Organizations (NGOs), and the Food Manufacturing and Food-Service Industry. Health Canada chairs this group whose mandate is to develop and implement a strategy to reduce the level of Sodium intake by the Canadian consumers.

The strategy prepared by the SWG has three main components: (1) consumer education, (2) voluntary reduction of sodium levels by the food industry, and (3) research.

The targets for the reduction of sodium intake established by the SWG are based on two main guidelines: (1) the results of the salt reduction campaign initiated in 2003 by the Food Standards Agency (FSA) of the United Kingdom, and (2) a review of the current situation regarding the level of sodium and its content in Canadian food products.

In Canada, the UK's FSA approach has been adopted to take into consideration the current amount of sodium present in Canadian foods and the real situation of the Canadian food market. To accomplish these objectives, in 2010 Health Canada will publish voluntary targets that define the maximum amount of sodium recommendable for different categories of foods. The new target levels are intended to help Canadians to reduce their intake of sodium from an average of 3,400 mg per day to 2,300 mg per day by 2016.

Health Canada selected groups from the processed foods category that present the highest levels of sodium. These food categories are identified as Group I, while all the other remaining categories are identified as part of Group II.

The food groups comprising Group I include: Processed meats, Bakery products, Cereals, Combined dishes, Dairy, Fats and Oils, Fish and Seafood, Sauces, Snacks and Soups.

The representatives of the Food Industry participating in the SWG are concerned about Health Canada's plan to set very ambitious sodium reduction targets, and the dilemma for the red meat processing industry in Canada is to prepare effective solutions to successfully face this challenge.

Indeed, salt is not only an excellent and versatile ingredient for enhanced flavour but also a preservative. In fact, the use of salt as a preservative has been practiced for many centuries all over the world before the era of development of the industrial refrigeration technologies [3].

Historically, the early spoilage of meat and other food products has been prevented with the addition of salt and brine solutions even before a detailed understanding of its chemical properties was discovered.

Salt is a product obtained as a result of the ionic bond between an anion

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(chloride), and a metallic cation such as sodium, potassium, magnesium, or calcium.

A brine solution prepared as water saturated with salt, and particularly with sodium chloride (NaCl), has been a very useful ingredient for its valuable functionality purposes as protein binder and a preservative. Since the solubility of sodium chloride in water is very high, the brine solutions allows the ions Na+ and Cl- to be dissolved, and this property facilitates the modification of the electric balance of the chains of amino acids present in the meat products.

Therefore, the functionality of salt is an advantage related to its ability to bind proteins, retain water and hold fat, which helps to maintain a firm structure, even when the product is submitted to heat during its process. Also, considering the relative low cost of salt, the use of brine solutions in the red meat process lowers the freezing temperature and improves the heat exchange properties of the product.

Although the chloride anions experience a strong attraction and further neutralization with the positive charges of the amino acids of the meat proteins, the remaining sodium cations of bigger size do not bind at the same pace to the negative ions of these proteins. The different behaviours manifested by the chloride anions and the sodium cations offer opportunities to prepare salt and brine solutions with lower amounts of sodium. One of such alternatives is the mix of potassium chloride and sodium chloride for new applications in the meat process. The delicate balance that needs to be accomplished is to reduce the level of sodium without affecting the functional advantages, preservative properties, the higher palatability and the acceptable flavour offered by the table salt and recognized by the consumers[4].

According to some stakeholders and industry representatives participating at the Sodium Work Group led by Health Canada, currently known alternatives to sodium chloride do not offer a good solution to the challenge of reducing the level of sodium in processed meats. This difficulty is related to the excellent properties of table salt for the enhancement of the qualities of the processed meats, in particular in matters related to taste, function and food safety at a very favourable cost[5].

Nevertheless, many food companies are aggressively trying to develop effective solutions to successfully overcome these obstacles.

On February 15th, 2010, Sara Lee Corp. recently announced its commitment to cutting salt levels by an average of 20% over the next five years[6].

In 2009, ConAgra Foods and Unilever have made similar public proclamations about big salt reductions. They've all come at a time when food-makers are increasingly being pressured by health advocacy groups to cut back on sodium.

On March 17th, 2010, Kraft Foods announced a plan to reduce sodium by an average of 10% across its North American portfolio over the next two years[7], Rhonda Jordan, president of the Health and Wellness division of this corporation said in a statement: "Kraft's plan will amount to eliminating more than 10 million pounds of salt from foods. It will impact more than 1,000 stock-keeping units."

Kraft already has replaced sodium by 5% to 30% in many products. Since 2008, the company has reduced sodium in all Oscar Mayer white turkey deli meat products by at least 15%, in Oscar Mayer Deli Fresh Chicken Breast Strips by 20%, in two Kraft Light Dressings by more than 30%, and in Original and Reduced Fat Wheat Thins by 10%.

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In Canada, representatives from Nestle Canada and Kellogg Canada recently appeared before the House of Commons health committee which is studying excess sodium consumption in the Canadian diet(8).

These food corporations announced that they are making progress on lowering sodium in their products and are committed to helping Canadians cut back on it in their diet.

Catherine O'Brien, Director of Corporate Affairs for Nestle said: "This is an ongoing process, and while we have made great strides, we know that it is a journey and we have opportunities for continued improvement".

Also, Christine Lowry, Vice-President of nutrition and corporate affairs for Kellogg, similarly said her company is gradually changing its products and that there are challenges to re-formulating foods.

"Consumers are very sensitive to formulation changes and drastic changes in the flavour profile of an established brand, especially breakfast cereals that they know so well," said Lowry. "If not done properly, consumers may reject the new taste and walk away from the food product. In doing so, they may choose a replacement food that may not have the nutritional benefits of high-fibre breakfast cereal."

The joint efforts between the Government, the Academia, the groups representing the consumers and the food industry can deliver good results in all fronts to effectively reduce the consumption of sodium. The three fronts: education, product development with lower contents of sodium, and research, which have been considered in the strategy prepared by the Sodium Working Group, need further development and a clear path forward.

Regarding the needs for more research, further collaboration and alignment between the different parties must be part of a very clear strategic plan to have a positive impact and effectively change the behaviour of the consumers towards the consumption of sodium. Without a strong educational component on the development of this strategy, the population will not take advantage of the benefits offered by the food companies investing resources for the development of new food products because the consumers could end up adding excessive amounts of table salt to new processed foods based on formulations with lower contents of sodium.

Hence, a comprehensive research policy and consistent measures to evaluate the performance in all fronts need to be part of a coordinated effort among the different stakeholders. This integral approach is necessary to insure a successful implementation of the ambitious strategy of the Sodium Working Group for the effective reduction of sodium intake levels in Canada.

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