

A-HA NEWS

Innovative agri-food
and nutrition research
for healthy aging

2010

Enhancing the nutritional quality of food for healthy aging

Older adults face several obstacles when it comes to attaining optimal nutritional health. They often need more nutrients than most population groups, yet they tend to eat much less and are often dealing with some level of chronic disease (e.g. cardiovascular disease, dementia, osteoporosis, age-related macular degeneration, arthritis) resulting in potentially a need for more nutrients. To top it off, many of these individuals are on several different types of medication decreasing their desire for eating. Caregivers or family members often resort to supplementation as a solution. Together these factors suggest a strong need to enhance diet through fortification and the development of innovative food products that meet nutritional and sensory needs for this growing segment of the population.

Dietary requirements change throughout the different stages of life. As people age these requirements increase significantly, not only for disease prevention but to maintain body functions and overall health. Therefore, older adults require higher quality, more nutrient dense foods. For example, they need up to 50% more protein in their diet to prevent malnutrition

The new Long Term Care Act and its guidelines are being rolled out. This means changes to the way nutrition and food service administrators plan menus in long term care. Rather than only focusing on Canada's Food Guide, which recommends quantity of portions of specific food groups, the new guideline will also include reference to the Dietary Reference Intake (DRI). For long term care dietitians and food service managers, these changes reduce focus on portions for residents and increase focus on nutritional quality of food. This creates a strong opportunity for food enhancement strategies to be researched and implemented in this care environment.

and sarcopenia (loss of lean muscle mass).

Statistics have demonstrated that 25–75% of long term care residents are malnourished. Although residents requiring texture modified diets tend to be at the highest risk for malnutrition, Professor Heather Keller from the

INSIDE

Texture modified food **2**
Functional food habits of older adults **4**

Increasing intake of long-chain Omega-3 fatty acids in retirement/LTC **3**



Department of Family Relations and Applied Nutrition at the University of Guelph says, "Everyone in long term care is at nutrition risk," and that it is a "significant problem."

Other micronutrients (e.g. Vitamin D, Calcium, Omega-3 Fatty Acids (DHA/EPA), Lutein) are typically consumed in insufficient amounts and are equally as important for disease prevention in this population. A few recent studies have shown that fortification of food products with protein, energy, dietary fibre and micronutrients have benefits, yet development of and research into diverse commercially available products is lacking.

To address this knowledge gap, A-HA research scientists are interested in evaluating factors that affect dietary intake in retirement and long term care settings (physical and psychosocial); exploring functional food strategies for increasing protein and micronutrient intake; and, enhancing sensory characteristics of these foods. The broad research expertise of the A-HA group is able to meet the nutritional and sensory needs of older adults through multiple research projects while realizing innovative opportunities for Ontario's agri-food, nutrition and health sectors.

Professor Keller is the Co-Chair of a new initiative at the Canadian Nutrition Society (CNS) referred to as the Canadian Malnutrition Task Force (CMTF). The group's mission is to create knowledge and close the gaps between research and practice in the prevention, detection, and treatment of malnutrition in adult Canadians through the continuum of care. For more information on the CMTF, see the CNS website (cns-scnc.ca).

Texture modified food

Research exploring commercial versus in-house preparations

Up to 30% of long term care residents in Ontario require a texture modified diet, often because of chronic degenerative diseases such as Alzheimer's disease and related dementias, Parkinson's disease, and stroke. This means that meals are chopped, minced or pureed depending on the level of dysphagia (i.e. difficulty swallowing), being experienced by the resident. Many of these individuals also suffer from nutritional deficiencies, reducing their quality of life and increasing their risk of mortality. While there are commercial modified texture products available, a common

Anosmia is the lack of functioning olfaction, or in other words, an inability to perceive odours. A common occurrence in older adults, anosmia can lead to depression, loss of appetite, or reduced enjoyment of food – all of which affect food intake.

in-house preparation strategy is to add liquids and blend the food product until the desired consistency is reached.

Dr. Lisa Duizer from the Department of Food Science and Dr. Heather Keller from Family Relations and Applied Nutrition, both at the University of Guelph, hope to provide some much needed insight into enhancing pureed diets



for residents in long term care. They have received funding from the Ontario Ministry of Agriculture, Food and Rural Affairs – University of Guelph partnership program to evaluate dietary meal options for aging adults with dysphagia, focusing on sensory appeal, budgetary constraints of long term care facilities, and nutritional quality.

A qualitative study of expectations of commercial pureed meal ranges will be

first undertaken to assess the expectations of all individuals who prepare, serve and consume these products within a long term care facility. Following this, acceptability of the various product lines will be assessed through sensory panel evaluations of the foods to determine the properties which affect overall liking of the products. The nutrient composition of these products will also be determined through physical testing and a

cost evaluation will be conducted.

Another study that these researchers are working on will explore methods of texture modification for fresh, locally produced meat and vegetables in retirement and long term care homes so that the nutritional and sensory qualities address the needs of older adults. Partners for this project include the Turkey Farmers of Ontario and the Ontario Fruit and Vegetable Growers Association. Funding for this project has been provided by Agriculture and Agri-Food Canada through the Canadian Agricultural Adaptation Program (CAAP). In Ontario, this program is delivered by the Agricultural Adaptation Council.

Both of these projects have a significant focus on the sensory characteristics of

food provided in long term care – a key area of interest when addressing the need to enhance quality of food.

In terms of strategies for product enhancement when it comes to texture modified foods, Dr. Duizer says, "Improving the sensory and nutritional properties of foods designed for individuals with swallowing difficulties not only enhances their eating experience but also has the potential to improve quality of life."



Strategies to increase intake of long-chain Omega-3 fatty acids in retirement/LTC

Docosahexaenoic Acid (DHA) and eicosapentaenoic acid (EPA) are essential long chain fatty acids found in fish oil. DHA is found in high levels in the brain and retina as a structural component of membranes and provide optimal neuronal functioning (learning ability and mental performance) and visual acuity, in the young and old alike. Unlike DHA, EPA does not accumulate in brain tissue, but may benefit brain function by supporting the vasculature and blood flow.

The vasculature benefits of DHA and EPA aid in the prevention and management of cardiovascular disease. In addition, DHA and EPA have anti-inflammatory properties that may be beneficial for various chronic disorders, such as rheumatoid arthritis and Alzheimer's disease. Recent studies have shown improvements in retention of

cognitive functioning with age and reduction in decline of cognitive abilities.

Dr. Ken Stark from the Department of Kinesiology at the University of Waterloo is interested in the link between DHA/EPA and health of older adults. He and his research team conducted preliminary research to determine intake by looking at composition of food being consumed by residents living in retirement and long term care in Ontario. Results showed low intake levels (low levels in the foods being consumed), and that most residents were actually consuming lower levels of DHA/EPA than those associated with health benefits.

The next step to Dr. Stark's research was a study to determine functional strategies to increase DHA/EPA consumption by working with retirement and long term care food services at the

Schlegel Seniors Villages, and by collaborating with Ocean Nutrition Canada to work with their MEG-3 microencapsulated fish oil product.

The research team is currently working to evaluate palatability and taste of the various food items from the food services menu that have been enriched in DHA and EPA with the microencapsulated product with the same population of older adults. This portion of the project also includes an initial assessment for the feasibility to incorporate the foods into usual food services procedures.

Future steps include an intervention using these products to evaluate the effectiveness of these functional foods in increasing intakes of DHA/EPA via an evaluation of biochemical markers in the blood. The objective will be to determine whether these strategies are capable of

A major consideration for innovation and development of enhanced foods for older adults living in long term care is the ability to navigate through regulatory requirements for both the food industry (i.e. Health Canada), and long term care homes (i.e. Ontario Ministry of Health and Long Term Care).

increasing the amount of DHA/EPA in the diet and blood to levels associated with protection from several age-related morbidities (e.g. cardiovascular disease, macular degeneration, cognitive decline). If successful, this food-based nutrient delivery system may serve as a model for dietary intervention studies in residents of long term care facilities.

Upcoming Events

2010 Health Professionals' Forum
Royal Agricultural Winter Fair
Nov. 10, 2010
Toronto, ON

2nd Annual Long Term Care Applied Research and Education Day
Nov. 23, 2010
Toronto, ON

2nd Conference on Positive Aging
Nov. 26, 2010
Vancouver, BC

The A-HA program is committed to disseminating research results from this project, as there is huge potential to enhance quality of life for older adults through the innovative use of food and nutrition strategies.

Understanding functional food habits of older adults

Alison Duncan, Ph.D., R.D., from the Department of Human Health and Nutritional Sciences, and Judy Sheeshka, Ph.D., R.D., from the Department of Family Relations and Applied Nutrition at the University of Guelph, are working on a project funded by the Canadian Foundation for Dietetic Research, Nutrition Research in Focus program entitled, "Exploration of the consumption, awareness, understanding and motivating factors related to functional foods in older adults."

The research team hopes to generate data on the consumption of functional foods among older adults, with specific focus on consumption, purchase tendencies, positive and negative factors affecting consumption, information sources, and awareness of functional foods in relation to health. Ultimately, they hope



For more information on any of the research projects mentioned, please visit the A-HA website aha.the-ria.ca.

to generate information that will inform product development areas focused on the

older adult population, while providing dietitians with recent and relevant information to better equip them for interactions with individuals that may benefit from functional foods.

Managing rheumatoid arthritis with U of G-developed spearmint tea

As 4.5 million Canadians live with some form of arthritis, at an estimated cost of \$18 billion per year, developing alternative therapies to aid in alleviating the inflammation and symptoms associated with arthritis is an exciting area of growth for the functional foods and natural health products sector.

Through research in the Department of Plant



Agriculture (Dr. Laima Kott), a spearmint plant containing 15-20 times more rosmarinic acid than native

mint has been developed. Rosmarinic acid is a compound found in many herbal plants, including rosemary, oregano and spearmint. It has been shown to have antioxidant, anti-inflammatory and antibacterial properties.

The Human Nutraceutical Research Unit (HNRU), in the Department of Human Health and Nutritional Sciences has partnered with the

Department of Plant Agriculture to test the efficacy of a high rosmarinic acid spearmint tea in improving measures of physical function, disease activity, cartilage degradation and inflammation in individuals with rheumatoid arthritis.

Alison Duncan, Ph.D., R.D. is the Associate Director of Research at the HNRU, and is part of the research team for this project.

A-HA
AGRI-FOOD for
HEALTHY AGING

The Agri-food for Healthy Aging (A-HA) initiative is a collaborative research group created through the efforts of the Schlegel-UW Research Institute for Aging (RIA), University of Guelph, University of Waterloo and MaRS Landing. By exploring linkages between agriculture, food, nutrition and human health, A-HA aims to realize innovative opportunities for Ontario's agri-food and health sectors to improve health and wellbeing of older adults.

This newsletter was made possible by:

