Science Atlantic Nutrition and Foods 2020
University of Prince Edward Island
March 13, 14, 2020
Student Abstracts

Oral Presentations Session A (9:30-10:30 AM)
Faculty Facilitator: Dr. Sarah Finch
Student Facilitator: Kristen Mann
Presentation 1: Jelisa Gallant
Presentation 2: Julia Heckbert
Presentation 3: Suraweera Arachchilage Tharindu Lakshan
Presentation 4: Kate Braddon

Oral Presentations Session B (1:00-2:00 PM)
Faculty Facilitator: Dr. Jennifer Taylor
Student Facilitator: Julia Heckbert
Presentation 5: Madélie Giguère Johnson
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Enhanced Poster Presentations:
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Poster Presentations:
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Oral Presentations:

1. Human milk total thiamine concentrations among rural Cambodian women on various thiamine supplementation regimes, 12 weeks postnatal

Jelisa Gallant, Graduate Student, Mount Saint Vincent University
Funding: Bill & Melinda Gates Foundation and the Sackler Institute for Nutrition Science, New York Academy of Sciences
Supervisors: Whitfield, Kyly
Other authors: Chan, Kathleen; Allen, Lindsay H; Baldwin, Dare; Borath, Mam; Green, Tim J; Hampel, Daniela; Leemaqz, Shalem; Measelle, Jeffrey R; Ngik, Rem; Prak, Sophonneary; Wieringa, Frank T; Yelland, Lisa N; Kroeun, Hou and Whitfield, Kyly C.

Introduction: Thiamine deficiency and infantile beriberi remain public health concerns in Cambodia and other regions where thiamine-poor white rice is a staple food. Lactating women with low thiamine intakes produce milk containing little thiamine, putting their exclusively breastfed infants at high risk of deficiency. Thiamine deficiency among infants can cause potentially fatal beriberi, or sub-clinically, may impact cognitive development and neurological functioning. Little is known about milk thiamine concentrations in the exclusive breastfeeding period, specifically at 3 months when infantile beriberi-related mortality trends peak. Investigating the impact of various, long-term, low dose, supplementation regimes on human milk thiamine concentrations, may help to inform future interventions to combat maternal and infantile deficiency in Cambodia and other beriberi-endemic countries.
Research hypothesis (HA): There will be a difference in total milk thiamine between treatment groups; milk from women in the 10mg group will be highest and milk from women in the 0mg group will be lower.
Objective: To report, and assess difference in, milk total thiamine concentration at 2 and 12 weeks postnatal.
Methods: This study was part of a larger, 22-week double-blind, four-parallel arm, placebo-controlled randomized trial of thiamine supplementation (NCT03616288). 335 lactating women in Kampong Thom, Cambodia were randomized to consume one capsule containing 0, 1.2, 2.4, or 10 mg thiamine daily between 2 and 12 weeks postpartum. At 2 and 12 weeks postpartum, a full milk expression was collected. Milk thiamine concentrations were measured by HPLC-FLD.
Results, Discussion & Conclusion: Will be presented at the conference.

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2. Food use, food security and food production and sales across growing seasons among rural Kenyan women

Julia Heckbert, Undergraduate Student, University of Prince Edward Island
Funding: Queen Elizabeth II Diamond Jubilee Scholarship, Universities Canada
Supervisor: Taylor, Jennifer
Other authors: Taylor, Jennifer and Walton, Colleen

I**ntroduction:** University of Prince Edward Island and Farmers Helping Farmers, a PEI NGO have implemented horticulture and food-based nutrition education programs since 2010. While interventions have been associated with improved food insecurity, the impact of seasonality has not been considered. Further, the impact of homestead food production and sales on women,Äôs food consumption and food security has not been assessed.
Objective: To assess the effect of growing season on food insecurity and food consumption, as well as association between homestead food production and sales, food consumption and food security among rural Kenyan women.
Methods: In-home surveys were used to assess domains of food insecurity using the Household Food Insecurity Access Scale (HFIAS); food consumption was assessed using a food frequency questionnaire and homestead food production and sales was self-reported (n=66). Data was collected over two growing seasons (lean and post harvest) from May-Aug 2019. The proportion of food insecurity between growing seasons was assessed with chi square analysis. Growing season, food consumption, food production and sales will be assessed using chi square analyses.
Results: There was a higher rate of the quantity domain of food insecurity in the lean growing season (78%) compared to post harvest (52%) (p=0.02). There were no differences in food security related anxiety or food security related food quality. Differences in food use and food production/sales will be shown in the presentation.
Conclusions: Preliminary results suggest food insecurity rates may be influenced by season which has implications for the design and evaluation of future food-based interventions.

3. Apple flavonoids and quercetin reduce carcinogen-induced DNA damage in bronchial epithelial cells in vitro

Suraweera Arachchilage Tharindu Lakshan, Graduate Student, Dalhousie University-AG
Funding: Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant
Supervisors: Rupasinghe, H. P. Vasantha
Other authors: Merlin, Jose and Rupasinghe, H.P. Vasantha

Introduction: Cancer is one of the most common causes of mortality worldwide. Lung cancer has shown the highest mortality rates compared to other types of cancers in Canada. Chemotherapy and radiotherapy are currently providing the basis for cancer therapies, although both are associated with significant side effects. Therefore, it is important to identify dietary approaches and food bioactives that can prevent or reduce initiation of cancer.
Objective: Hence, this study investigated the ability of apple peel flavonoids (AF4) and its major constituent quercetin to reduce the DNA damage in vitro.
Methods: Human bronchial epithelial cells (BEAS-2B) were subjected to a known carcinogen 4-[(acetoxymethyl)nitrosamino]-1-(3-pyridyl)-1-butanone (NNKOAc) to induce DNA damage. MTS assay was performed to monitor the cell viability for determining the sub-toxic concentrations of quercetin, quercetin-3-O-glucoside (Q3G), AF4, and NNKOAc to be used in the studies. Measurement of intracellular ROS was performed using DCFH-DA assay. The DNA damage was measured using DNA fragmentation by ELISA and Comet assay.
Results and Discussion: Interestingly, pre-exposure to AF4 (50 µg/mL), quercetin (50 µM), and Q3G (50 µM) followed by NNKOAc (100 µM) challenge, significantly decreased the ROS level and DNA damage in BEAS-2B cells compared to the control.
Conclusion: The results demonstrate that apple flavonoids and quercetin have the ability to reduce chemical carcinogen induced DNA damage.

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4. Evaluating Pre- and Post- Education Knowledge Scores from Women with Gestational Diabetes Mellitus Interacting with an Online Low Glycemic Index Education Platform

Kate Braddon, Undergraduate Student, Mount Saint Vincent University
Funding: 1) Mount Saint Vincent University Committee on Research and Publications; Standard Internal Research Grant. 2) CN Student Research Internship - Management Development for Women Excellence Fund.
Supervisor: Grant, Shannan
Other authors: LeBlanc, Julianne; Grant, Shannan; Coolan, Jillian; Snelgrove-Clarke, Erna; Walsh, Catherine; Medynski, Joline; Hayward, Kathryn; Carson, Glenda and Cashen, Nancy

Introduction: Women who develop Gestational Diabetes Mellitus (GDM) are asked to implement behaviour change within a short period of time. Medical nutrition therapy is taught by registered dietitians as a self-management tool for GDM. Using glycemic index (GI) to choose carbohydrate foods is current standard care, according to Diabetes Canada Clinical Practice Guidelines (2018), but investigation is required to see if patients can increase GI knowledge through a low-GI education-based platform. Design/Location: Prospective multicentre parallel-group randomised trial (secondary outcome analysis), based out of an urban teaching hospital in Nova Scotia.
Hypothesis: GI knowledge scores will increase significantly within the low-GI group and between groups post-intervention.
Objectives: (1.) To assess if a low-GI education platform will increase participants (n=30) knowledge scores from baseline till 4 to 6 post-partum. (2.) To assess if GI knowledge will differ between study groups post-intervention.
Methods: Participants (n=1) were randomly allocated to the standard care (n=1) or low-GI group. Each group received a 40-minute educational class tailored to their study group. The Glycemic Index Questionnaire (GIQ©; standardized, pre-tested) was administered pre-intervention and post-intervention in the low-GI group and pre-intervention in the control group. Resulting knowledge scores are presented as percent (counts).
Results: One participant obtained a baseline knowledge score of 27% (4/14), 16 letters of information were signed and 2 participants consented.
Discussion/Conclusion: The baseline knowledge score of the study participant is reflective of baseline data collected in other clinical studies applying the GIQ©. At the conference, subsequent results will be presented within and between groups.

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5. Assessment of dietary intake and food behaviours among adolescent girls living in the Dakar region, Senegal.

Madélie Giguère Johnson, Graduate Student, Université de Moncton
Funding: International Development Research Center (IDRC) and the Social Sciences and Humanities Research Council of Canada (SHRC) which supported this research through the Queen Elizabeth Scholarship program
Supervisors: Blaney, Sonia
Other authors: Ward, Stéphanie and Blaney, Sonia

Introduction: Worldwide, malnutrition affects one out of three adolescent girls. In Senegal, 35% of adolescents are undernourished and 56% are anemic**.**
Objectives: Based on the UNICEF framework of the determinants of malnutrition, this research aimed to assess the quality of the dietary intake of adolescent girls aged 14 to 17 in the Dakar region, Senegal. Specific objectives were 1) to assess energy, fibre, macro and micronutrient intakes 2) to describe the types and the quality of foods consumed, and 3) to assess eating behaviours.
Methods: Data on dietary intake of 136 adolescents were obtained using three non-consecutive 24h recalls from adolescent girls attending two colleges. Energy and nutrient intakes were estimated and compared to recommendations. Foods were classified by food group and furthermore according to whether they were healthy /unhealthy. Proportions of adolescent girls who ate breakfast and the total daily amount (g) of fruits and vegetables consumed were calculated.
Results: Results show that energy, protein and sodium intakes exceed recommendations and that half of the energy intake comes from lipids. While mean intakes of fibre and iron were below recommendations, intakes of zinc and vitamins A and C appear adequate. Prevalence of inadequate intakes was also above 80% for iron and fibre. Approximately 45% of the foods consumed were healthy and the majority came from grains.
Discussion: Some positive eating behaviours were identified such as drinking water, eating breakfast and having 3 meals/day.
Conclusions: Results of this research will help improve nutrition programs targeting Senegalese adolescent girls.

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6. Extracted microbial oil as a sustainable alternative of fish oil in Atlantic salmon (*Salmo salar*) feed: Growth and fatty acid impacts

Minmin Wei, Graduate student, Dalhousie University

Funding: Ocean Frontier Institute, Canada First Research Excellence Fund
Supervisor: Colombo, Stefanie
Other Authors: Parrish, Chris; Rise, Matthew L and Guerra, Nigel

Introduction: The use of microbial oil in aquaculture feed can be a sustainable way to provide farmed fish with a sustainable source of essential omega-3 long-chain polyunsaturated fatty acids, DHA and EPA, to replace fish oil (FO), a finite and overexploited resource.
Objectives: A 16-week feeding trial was conducted on Atlantic salmon (24 g initial weight) in freshwater to test the effects of this microbial oil (MO) on growth performance and lipid metabolism.
Methods: Four experimental diets were tested: a reference diet (FO, 20% FO) and a commercial-type control diet (FO/VO, 10% FO + 10% vegetable oil), a low MO diet (low-MO, 5% MO+15% vegetable oil) and a high MO diet (high-MO, 10% MO+10% vegetable oil).
Results: No significant differences were found in growth performance and lipid class content among treatments. Muscle fatty acids in total lipids reflected the fatty acid profile of the diet and DHA was comparable between FO and high-MO. Liver tissues showed no differences in DHA concentrations. Significantly lower levels of EPA was found in both liver and muscle tissues when fish were fed diets with MO.
Conclusion: Microbial oil possesses great potential in replacing fish oil in Atlantic salmon.

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7. Assessing the Prevalence and the Effect of Nutrition Education on Female Athlete Triad Risk at Acadia University University

Madalyn Higgins, Undergraduate Student, Acadia University
Funding: Harrison McCain Foundation Award
Supervisors: Kaviani, Mojtaba
Other authors: Kaviani, Mojtaba

Introduction: Despite numerous health benefits seen though female participation in sports, there has been an increase in sports-related health consequences including the female athlete triad (low energy availability, low bone mineral density, and menstrual dysfunction). Little is known about the triads' prevalence /effective methods to reduce risk.
Objectives: The objective of this research was to answer the questions "How many athletes at Acadia University University are at risk of the female athlete triad, what factors impact triad risk, and what, if any, are the effects of nutrition education on triad risk and dietary intake".
Methods: Varsity and club female athletes were recruited. Participants were randomized to an experimental group attending eight nutrition education sessions, or a control group. All participants completed a survey assessing triad risk and nutrition knowledge prior to, and following intervention.
Results: Triad prevalence at AU was high with 29.4% of athletes at risk of the triad prior to intervention and 47.1% at risk following intervention due to injury. Negative beliefs surrounding food were common with 94.1% of participants reported feeling guilty when choosing unhealthy foods. Intervention demonstrated no significant effect on athlete triad risk as well as energy, fat, carbohydrate, protein, or calcium and vitamin D intake.
Conclusions: Almost half of the participants were at risk of the female athlete triad and nutrition education did not appear to significantly affect triad risk. Many factors including negative beliefs surrounding food affected athletes, triad risk. These findings raise questions about reducing risk of the female athlete triad.

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8. Can herbal tea fight against Streptococcus pyogenes infection

Niluni M. Wijesundara, Graduate Student, Dalhousie University
Funding: NSERC CRSNG and Island Abbey Foods (honibe), Charlottetown, PEI
Supervisor: Rupasinghe, H.P. Vasantha
Other Authors: Rupasinghe, H.P. Vasantha

Introduction: Herbal teas are becoming popular as functional beverages due to their various health promotional properties.
Objectives: This study aimed at identifying hot water infusions of herbs against streptococcal pharyngitis (strep throat).
Methods: Hot water infusions (HWIs) from twelve herbs were assessed against three strains of *Streptococcus pyogenes*. Phytochemicals present in HWIs were identified using ultra performance liquid chromatography-mass-spectrometry. Minimum inhibitory (MIC) and bactericidal concentrations (MBC) using broth microdilution, anti-inflammatory activity using ELISA and cell viability were evaluated. Four efficacious HWIs were evaluated for time-kill using growth curve assay, biofilm inhibition using MTT assay and morphology was visualized using scan electron microscopy (SEM).
Results: Licorice root had the lowest MIC of 1.56 mg/mL followed by barberry root, thyme, and oregano flowering shoots, with 3.16 mg/mL MIC value. Licorice demonstrated a bactericidal effect on *S. pyogenes* within 12 hours after exposure, while others needed 24 hours for a similar effect at their respective MBC. The HWIs inhibited biofilm formation at 3.15 to 6.25 mg/ml which was confirmed by dead/ruptured cells or cell debris observed in SEM. All the HWIs showed promise for safety when cytotoxicity was tested using cultured tonsil cells. HWIs also reduced the secretion of pro-inflammatory markers (IL-8, hBD-2, ENA-78, and CGP2) in inflamed tonsil cells induced by *S. pyogenes*. Overall, non-toxic concentrations of efficacious.
Conclusion: HWIs from licorice root, barberry root, thyme, and oregano flowering shoots have shown potential for developing natural health products such as herbal tea for the management of *S. pyogenes* infections.

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Enhanced Poster Presentations:

9. Exploring Youth's Perspectives of Indigenous Food Sovereignty during a Traditional Food Project in Mi'kma'ki

Renee Bujold, Graduate Student, Dalhousie
Funding: Centre for Employment and Innovation, St.FX
Supervisors: Martin, Debbie and Fox, Ann
Other authors: Martin, Debbie; Fox, Ann; Prosper, Kerry and Pictou, Kara

Introduction: Food insecurity is a major health challenge in Indigenous communities across Canada. Indigenous food sovereignty (IFS) provides a lens to address food insecurity in a decolonizing and empowering way. Enabling Indigenous youth to embrace traditional food practices and knowledges is an important element of sustaining culture and a critical component of IFS. To engage youth, the Land2Lab pilot project was developed through a partnership between St. Francis Xavier University and the Paqtnkek community in Mi'kma'ki (Nova Scotia).
Objective: The project aims to empower youth to be able to make decisions about their consumption of traditional foods, harvesting practices, and the land. This study will explore Mi'kmaq youth's perspectives about IFS during the Land2Lab project.
Methods: The Land2Lab project involves four seasonal workshops where Elders will teach youth how to gather food from the land and prepare traditional recipes. The workshops will end with an Elder-led sharing circle where participants will discuss and reflect on their learnings. Data collection will occur during the sharing circles where youth's perspectives about IFS during the Land2Lab project will be gathered and analysed using narrative inquiry.
Anticipated Results: It is anticipated that youth will gain a deeper understanding about traditional foodways and will value land-based learning opportunities as a way to (re)connect with Indigenous culture and knowledges.
Conclusions: As the first study involving Mi'kmaq youth and IFS in Mi'kma'ki, this project may encourage more community-led programming that engages youth in traditional foodways and inter-generational land-based learning to encourage (re)connection with Indigenous culture.

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10. Assessing the Implementation of the New Canada's Food Guide Recommendations in Childcare Settings

Imene Hank, Undergraduate Student, University of Prince Edward Island
Funding: UPEI Internal Research Grant
Supervisor: Finch Sarah
Other authors: Finch, Sarah and Rossiter, Misty

Introduction: Preschool-age children can consume over 50% of their daily calories at childcare centers which rely on Canada's Food Guide to plan and evaluate their menus. It is therefore important to investigate the influence of recent changes in the guidelines, particularly their emphasis on plant-based proteins.
Objectives & Hypothesis: This study aims to assess childcare centers' implementation of the new guidelines, particularly the incorporation of plant-based proteins. It is predicted that childcare centers across Prince Edward Island are struggling to implement the recent changes.
Methods: All eligible licensed childcare centers across PEI were invited to complete a survey on their adoption of the new guidelines and to submit their menus for evaluation.
Results: While recruitment is ongoing, 9 centers completed the survey and 8 menus were analyzed. Preliminary results suggest that childcare centers are aware of the changes to Canada's Food Guide. However, they struggle to implement them and incorporate plant-based proteins into their menus due to children's refusal to eat them even when offered once a week.
Discussion: Food reluctance and aversion are common among preschoolers which may explain their refusal to consume unfamiliar foods such as beans. Frequent exposure and serving with familiar foods might increase children's willingness to consume plant-based foods and facilitate the implementation of the current food guide.
Conclusion: Childcare centers may require further training and support to implement the new Canada's food guide recommendations, specifically around plant-based proteins.

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11. Antimicrobial properties of biodegradable canola protein-oleic acid composite films against Listeria innocua and Escherichia coli

Thilini Nuwandhara Dissanayake, Graduate Student, Dalhousie University-AG
Funding: MITACS and Dalhousie University "Vice President Research and Innovation International Seed Fund" (VPRIIS).
Supervisors: Bandara, Nandika
Other authors: Bandara, Nandika and Ranadheera, Senaka

Introduction: Food packaging is a key unit operation in the food industry that protects food from external environments such as microorganisms, temperature, oxygen, light, and moisture. However, the sustainability of food packaging materials is one of the main concerns in the food industry. This study was aimed at preparing a biodegradable packaging film enriched with antimicrobial properties to ensure food safety and sustainability.
Objective: The objective of this study was to evaluate the antimicrobial properties of prepared films against gram-positive and gram-negative bacteria.
Methods: The films were made using a solvent casting method. Two different concentrations of canola protein, at 5%, 10% (w/w), four different concentration of oleic acid at 0%, 1%, 3%, 5% (w/w of protein), and two different concentration of nanocrystalline cellulose (NCC) at 0%, 1% (w/w of protein) were compared in terms of antimicrobial activity. Cinnamaldehyde was added to all the films at 1% (w/w of protein) concentration. Disk diffusion assay was carried out using *Listeria innocua* and *Escherichia coli* in the Listeria selective agar and MacConkey agar culture plates, respectively.
Results: All prepared films showed a clear inhibition zone against microbial growth. The zone of inhibition of packaging films was significantly different in terms of NCC concentration. Protein concentration showed a significant difference in antimicrobial activity against *Escherichia coli*, while oleic acid showed a significant difference in antimicrobial activity against *Listeria innocua*.
Conclusions: All prepared films showed antimicrobial activities against both microbes, and antimicrobial activity was affected by the concentrations of raw materials.

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12. Surf'n Bake: Exploring the Sensory Characteristics of Seaweed Composite Bread

Timothy Lamont, Undergraduate Student, Acadia University
Funding: 25.55 Acadia University Research Fund
Supervisor: McSweeney, Matthew
Other authors: McSweeney, Matthew

Introduction: Seaweeds are nutrient dense and have been included in the diets of coastal cultures for centuries; however, there has been limited consumption of seaweeds in Western diets due to arguably undesirable sensory characteristics.
Objectives: To determine at what percentage flour the addition of brown (*Ascophylum nodosum*) or red (*Chondrus crispus*) seaweed to whole-wheat bread is acceptable to Western consumers, if at all. Additionally, to determine to what extent brown or red seaweed alters the sensory properties of whole-wheat bread.
Methods: The two seaweeds were incorporated into separate batches of whole wheat bread by percentage weight flour at 0% (Control), 2, 4, 6, and 8%. The samples were presented to consumers (n= 54 and 64 for brown and red seaweed trials, respectively) to determine the sensory characteristics and overall liking of the breads using a CATA question and hedonic ranking scale.
Results*: A. nodosum* and *C. crispus* are acceptable up to 4% and 2%, respectively. The attributes "no aftertaste", "soft" and "chewy" drove consumer liking; while the attributes "dry", "dense", "strong aftertaste" and "saltiness" detracted from liking. The control was consistently ranked the most acceptable while the 8% bread was consistently ranked the least desirable.
Discussion: *A. nodosum* and *C. crispus* composite breads are acceptable in Western populations. However, undesirable sensory characteristics become more apparent as percentage seaweed increases, detracting from acceptability.

Poster Presentations:

13. Pumpkin Powder (Cucurbita maxima) Supplemented String Hoppers as a Functional Food

Anuruddika Malkanthi, Graduate Student, Dalhousie University
Funding: ICCR (Indian Council for Cultural Relations), Bangalore, India (No. BNG/171/2016-2017).
Supervisor: Hiremath, Umadevi S
Other authors: Hiremath, Umadevi S

Introduction: Pumpkin has frequently been used as a functional food due to its nutritional and health benefits. In this study, a new application of dried pumpkin powder in string hoppers (a Sri Lankan rice noodle dish) is shown.
Objective: The main aim of this work is to evaluate the addition of the dried pumpkin powder into rice flour on the physical, functional, nutritional and sensory properties of string hoppers.
Method: String hoppers were prepared using white rice flour, which was substituted with pumpkin pulp powder at 0, 10, 15 and 20%. Sensory evaluation was conducted using the 9-point hedonic scale to select the best accepted combination. Nutritional analysis was carried out on the product with the highest acceptability.
Results: The string hoppers with 20% pumpkin pulp powder received the highest scores for appearance (8.06), colour (7.93), aroma (8.02), taste (7.80), texture (7.93) and overall acceptability (8.13). Nutrient composition of 20% pumpkin pulp powder incorporated string hoppers was: moisture 47.79%, ash 1.22%, protein 6.12%, crude fiber 0.72%, respectively. There was a significant increase in nutrient content compared to control: β-carotene content of the accepted string hoppers was increased significantly (2.54mg/100g); significant increases in potassium, calcium, magnesium and phosphorus content were also observed. Finally, the addition of 20% pumpkin pulp powder increased the antioxidant activity significantly (0.056mmol/AAE/100g).
Conclusion: Pumpkin pulp powder can be successfully incorporated into traditional string hoppers and used as a functional food with its improved nutritional content.

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14. Parental perceptions of a nutrition screening tool and family feeding practices on PEI

Katrina Nagge, Undergraduate Student, University of Prince Edward Island
Funding: University of Prince Edward Island - Internal Research Grant
Supervisors: Rossiter, Melissa (Misty) and Finch, Sarah
Other Authors: Rossiter, Melissa (Misty) and Finch, Sarah

Introduction: The family environment has a strong influence on shaping the development of food preferences and eating style. Poor nutrition in childhood can have negative short and long-term consequences. Nutrition screening helps to identify risk factors and is an effective way of identifying children who require interventions. NutriSTEP® screening tools were recently implemented in Child Health Clinic across PEI.
Objectives: The objectives of this study were to 1) describe parents' perceptions of the NutriSTEP® screening process and 2) understand parents' experiences feeding their children.
Methods: Eleven participants (1 male/ 10 female) representing all three regions on PEI were recruited through flyers advertised at Child Health Clinics and through social media. Inclusion criteria included completion of the NutriSTEP® screening tool within the past five years and ability to participate in an English speaking interview. One-on-one audio-recorded interviews, approximately 30 minutes in length, were held over the phone or in person. Interviews were transcribed and analyzed using a qualitative descriptive approach.
Results: Preliminary data analyses show several key themes emerging, however full results will be available at time of presentation.
Discussion: Parents in this study valued nutrition screening tools for their children. Parents noted that children become increasingly picky overtime and the feeding practice of baby-led weaning appears to be growing in popularity among Island families.
Conclusion: Findings from this research will be used to inform the comprehensive approach that Health PEI is taking to identify nutrition problems and begin to understand parental feeding practices among families on PEI.

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15. A Comparison of Diet Diversity among Rural Kenyan Family Members.

Haley Mackenzie, Undergraduate Student, University of Prince Edward Island
Funding: Queen Elizabeth II Diamond Jubilee Scholarship, Universities Canada
Supervisor: Taylor, Jennifer
Other authors: Taylor Jennifer and VanLeeuwen, Charlene

Introduction: Food insecurity and low DD increase the risk of micronutrient malnutrition (MN) and remain a serious concern in Kenya. Although gender is known to be an important determinant of household level food access, there has been little formal research comparing women's DD with those of other household members.
Objective: To compare the diet diversity (DD) of rural Kenyan women and their respective family members.
Methods: A 24-hour recall was used to assess DD during home interviews. Women reported differences in food consumption among household members. DD scores, frequency of food consumption and the proportion with higher levels of DD (>=6 foods/day) were compared among household members including women (n=67), their husbands (n=44), their children (n=67) and other family members (n=13).
Results: Women had the highest DD scores among family members (7.3 ¬± 1.5; p=0.0003) with higher consumption of dried beans (p=0.02) and orange vegetables (p=0.01) relative to other family members. There was a higher proportion of women who consumed >6 different foods/day relative to men, children and other family members (28% vs 14%, 19%, 6%, respectively, p=0.003). Women indicated that their husbands often ate meals away from home and children consumed food at school.
Conclusions: Even though women reported more diverse diets than household members, overall DD was low in this sample, with 28% of women consuming 6 or more different foods/day. Challenges in assessing DD in household members will be discussed.

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16. Effect of Different Packaging Materials on Quality of Whole Black Pepper (Piper nigrum L.) during Bulk Storage

Janani Ranatunga, Graduate Student, Dalhousie University-AG
Funding: Faculty of Agriculture, University of Peradeniya , Sri Lanka and
Central Research Station, Department of Export Agriculture, Matale, Sri Lanka
Supervisors: Jayanath, Yasendra
Other authors: Jayanath, Yasendra and Induruwa, Sampath

Introduction: Packaging materials for bulk storage of whole black pepper (WBP) are important in retaining the quality of them in longer storage periods.
Objective: The objective was to determine the effect of packaging materials on the quality of WBP during bulk storage.
Methodology: Four packaging materials namely polypropylene (PP) woven sack bag, low-density polyethylene (LDPE, gauge 300) lined woven sack bag, PP (gauge 150) lined woven sack bag and PP (gauge 80) laminated woven sack bag was tested in which 5 kg of WBP samples were packed. Changes in Physiochemical parameters of WBP such as moisture content, volatile oil content, oleoresin percentage, color, and weight change were evaluated during two months of storage.
Results: Effects of packaging material on moisture content, volatile oil content and weight change of WBP during bulk storage were found to be significant ($p<0.05$) while showing no significant effect ($p>0.05$) on oleoresin percentage and color. The moisture content of WBP in woven sack bag and PP laminated woven sack bag increased significantly ($p<0.05$) compared to the initial moisture content whereas subsequent weight gains for WBP were recorded. Volatile oil loss from WBP was significantly ($p<0.05$) lower in PP laminated woven sack bags (from 4.04 ± 0.22% to 3.46 ± 0.00%) during the storage period, compared to other treatments.
Conclusions: LDPE-lined woven sack bag and PP-lined woven sack bag were suitable to reduce moisture absorption and PP-laminated woven sack bag was effective in retaining volatile oil, during bulk storage of WBP in the tested period of two months.

17. Effects of a Food-Based Nutrition Education and Horticulture Intervention on Nutrition Knowledge, Attitudes, Practices and Food Consumption of School-age Children in Kenya

Julie Oyoo, Graduate Student, University of Prince Edward Island
Funding: Queen Elizabeth II Diamond Jubilee Scholarship, Global Affairs Canada, Farmers Helping Farmers
Supervisor: Taylor Jennifer
Other authors: Taylor, Jennifer; VanLeeuwen, Charlene; Walton, Colleen and VanLeeuwen, John.

Introduction: University of Prince Edward Island and Farmers Helping Farmers (FHF) have successfully implemented combined food based nutrition education (NE) and horticulture (HORT) interventions in women's groups in Eastern Kenya. However, there are few such interventions among grade 6 school children, who are often involved in home food preparation and who are at risk of micronutrient malnutrition.
Objective: To assess the effects of a combined NE and HORT intervention on nutrition knowledge, attitudes, practices (KAP) and food consumption of school-age children in Kenya.
Methods: A quasi-experimental design will be used. Students at two schools with an established HORT intervention (school gardens and water tanks) will also receive a 6 week NE intervention in May/June 2019. Students in two comparison schools with no HORT intervention will receive NE while two other schools will receive neither intervention. It is anticipated that there will be a total of 200 students. A food-based NE intervention is being developed, modeled on our previous NE interventions and considering the Kenyan government school nutrition recommendations. A pre-tested questionnaire will be used to assess food consumption and KAP prior to and following the NE intervention. KAP and food consumption will be compared prior to and following the NE intervention in both intervention and comparison schools.
Expected Results: This research will provide evidence of the relative effectiveness of food-based NE and HORT interventions on KAP and food consumption among primary school children.

18. Identification of superior apple genotypes for the management of type 2 diabetes

Cindy Yu, Graduate Student, Dalhousie University-AG
Funding: NSERC, AAFC Kentville, Dr. Myles, and Dr. Rupasinghe
Supervisors: Rupasinghe, Vasantha
Other authors: Rupasinghe, Vasantha; Song, Jun and Myles, Sean

Introduction: Dietary antioxidants and polyphenols have shown to reduce type 2 diabetes (T2D) risks and manage glucose homeostasis of diabetic patients. Apples are a common, easily accessible fruit that is polyphenol-rich.
Objectives: The long-term goal of this research initiative is to develop a unique blood-glucose-managing apple cultivar for health-conscious consumers. In the present study, total antioxidant capacities (TAC), total polyphenolic contents (TPC), and inhibitory activity of carbohydrate-hydrolyzing enzymes *in vitro* of 500 apple genotypes were assessed.
Methods: Apples were collected at the commercial maturity stage from the Apple Biodiversity Collection in the 2016 harvest season (Kentville Research and Development Centre, Agriculture and Agri-Food Canada, Kentville, NS). Frozen, ground tissues and peel were used for extracting polyphenols using sonication-assisted 80% methanol.
Results & Discussion: The TAC (ferric reducing antioxidant power assay) and TPC (Folin-Ciocalteu assay) values had a significant, positive correlation (r^2=0.905; p=0.000) suggesting that polyphenols are the major contributor to the antioxidant capacity of apples. Positive correlations were also observed between TPC and α-amylase inhibition, and α-glucosidase inhibition.
Conclusion: The superior genotypes identified [Marechal (France), Daux Belan (France), and KAZ 95-18-05 (Kazakhstan)] will be further investigated as unique dietary sources for managing T2D using an experimental animal model of diet-induced insulin resistance.

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19. Characterizing the Impact of Soaking and Germination on the Aroma Profile and the Chemical Composition of Yellow-Eyed Bean Flour

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Funding: Saint Francis Xavier - University Council for Research Grant
Supervisors: English, Marcia
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Introduction: Pulses, including Yellow-Eyed (YE) dry beans, are being used more frequently in food applications due to their nutrient density and sustainable production. One of the ways dry beans are incorporated into food products is as gluten-free flour. However, their applicable uses are limited due to the presence of off-flavour compounds, which lower the quality of the final food product. Two pre-treatments applied to pulses to remove off-flavours include soaking and germination, but their effectiveness has little documentation in dry beans.
Objective: To characterize the effects of germination and soaking pre-treatments on the aroma profile and chemical composition of YE bean flours.
Methods: Gas-chromatograph/mass spectrometry was used to analyze the relative abundance of aroma-active compounds (AACs) in raw (RYE), soaked (SYE) and germinated (GYE) bean flour. Crude fat, total starch, crude protein, and electrophoretic protein profiles of each flour were compared.
Results: Germination had significantly increased the relative abundance of AACs. There were no significant differences between samples for crude fat and protein. However, GYE flour had a significant decrease ($p < 0.05$) of starch when compared to RYE and SYE flours.
Discussion: Changes to the relative abundance of AACs may be from lipid oxidation via lipoxygenases. Starch hydrolysis occurs during germination to supply the seed with energy for radicle growth, thus reducing the starch content in GYE flour.
Conclusions: Soaking and germination can alter the aroma and chemical composition of YE flour; however, further sensory studies using human participants are needed to determine the impact on consumer acceptance.

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20. Inaugural Science Atlantic Nutrition and Foods Conference Evaluation: A Self-Study on Quality Assurance and Rhetoric

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Funding: Social Sciences and Humanities Research Council Exchange Grants in collaboration with Science Atlantic Nutrition and Foods committee
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Background: The Science Atlantic Nutrition and Foods Committee and Nutrition and Foods Conference grew out of student feedback and a self-study conducted by the nutrition and foods programs in Atlantic Canada (1). It has been identified that there is a need and desire for Atlantic-based opportunities for nutrition and foods students/ trainees to exchange within and beyond their community and to create non-threatening small-scale opportunities for novice presenters to showcase their research.
Methods: Part 1: 80 delegates attended the conference. All were invited to complete the anonymous hard-copy mixed-form post-conference questionnaire. Part 2: Rhetorical analysis of conference communication and original conference rationale was done using the Artistic Proofs (Logos, Pathos, Ethos; means of persuasion). Both part 1 and 2 were integrated into a final report that was presented back to Science Atlantic, Fall 2019.
Results: N=34 responders completed the questionnaire. Key motivations/expectations of the responders for attendance were learning and networking experience (N=12). Pathos proof stood out in response to the networking where conference is a platform for communication. Overall rating of the conference was perceived to be well organized and excellent.
Conclusion: The SANFC provides potential to enhance workplace capacity to support nutritional scientists, dietitians in nutrition programs by providing a networking platform. Responders reported their interest regarding the conference and found this opportunity particularly beneficial for nutrition students to communicate with their peers, learn the trending research, present their own dissemination, and have a voice within the other Scientific disciplines.

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21. LGBTQ+ Experiences with Dietetic Professionals

Samantha Clow, Undergraduate Student, University of Prince Edward Island
Supervisors: Hewko, Sarah; Braithwaite, Ann
Other Authors: Hewko, Sarah and Braithwaite, Ann

Introduction: LGBTQ+ individuals face barriers to accessing quality health care. As a result, they experience health disparities. To compound the problem, inherent to the experience of being a sexual or gender minority, is greater risk of some conditions with significant nutrition risk including, but not limited to overweight/obesity, altered body composition and eating disorders/disordered eating. Existing standards for accreditation of dietetic preparatory programs do not explicitly require those entering the profession to have a familiarity with care of LGBTQ+ individuals. Research is lacking exploring LGBTQ+ individuals's experiences seeking and receiving care from Registered Dietitians (RDs).
Objectives: 1) To understand the experiences of LGBTQ+ individuals who have sought and received RD care within the last 5 years, and 2) to translate these experiences into guidance for i) RDs seeking to improve on LGBTQ+ experiences, and ii) preparatory programs seeking to prepare RDs to provide competent care to members of this population.
Methods: Participants age 18-35 were recruited to participate in a 1:1 semi-structured interview. A coding tree, developed collaboratively among researchers based on the literature and on personal/professional experience was applied to inform thematic analysis of interview transcripts.
Results: To be presented at the conference.
Discussion: Discussion will focus on potential barriers to accessing and receiving care for LGBTQ+ individuals, and possible steps that those in dietetics can take to reduce those barriers and facilitate a welcoming environment.
Conclusions: Education, pre- and post-qualification as an RD is essential to improve the care provided to LGBTQ+ individuals seeking medical nutrition therapy.

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22. The association between a provincial school wellness program, asthma diagnosis and frequency of healthcare utilization due to asthma

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Funding: Alberta Health Innovates
Supervisors: Taylor, Jennifer and Revie, Crawford
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Introduction: Although direct benefits of school wellness programs (SWP) on weight status and eating behaviours have been documented, we know little of their extended impact on childhood chronic illness, particularly asthma.
Objective: To assess the association between implementation of SWPs with asthma diagnosis and frequency of asthma related healthcare utilization (service use).
Methods: Provincial health records from birth to age 18 were linked with a school-based survey of grade five students in Nova Scotia. The frequency of physician visits over 18 years and the presence of an asthma diagnosis were outcomes measured from health records. Levels of SWP exposure included: provincial policy, Comprehensive School Health (CSH) and no program.
Results: Over 18 years of health records, CSH was associated ($p<0.01$) with a decrease in asthma diagnosis (OR= 0.86) compared to a provincial policy (OR=1.18); no significant comparison with asthma was seen among students in schools with no SWP. Among children aged 6-12y, the type of SWP was a significant predictor of asthma diagnosis, where CSH was associated ($p<0.001$) with a decrease in asthma diagnosis (OR=0.59) compared with no program (ref OR= 1.00). School program level was significantly associated with service use ($p<0.001$), CSH students had decreased service use compared to those with no program.
Conclusions: CSH interventions are associated with a decrease in asthma diagnosis and reduction of service use. These findings are important to public health stakeholders supporting the promotion of school-based interventions in the promotion of healthy lifestyle behaviours and may reduce childhood asthma and associated healthcare costs.

23. Optimized conditions for feather keratin extraction

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Funding: New Frontier in Research Funds
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Introduction: Keratin is a protein source that shows exceptional biocompatibility and less cytotoxicity. Poultry feathers are an excellent source of keratin and a cheap by-product obtained from the poultry industry. However, limited solubilization of keratin and the current high concentrated solvent methods used for keratin extraction will increase the cytotoxicity restricting further use of keratin.
Objective: The focus of current research is to optimize conditions for poultry feather keratin extraction.
Methodology: Initially, keratin extraction from feathers will be optimized for solubilization in lower concentrated urea/thiourea, sodium dodecyl sulfate, sodium sulfite, and dithiothreitol extraction solvent. The keratin extraction process will be optimized for the low concentrations of the extraction of chemicals over a wide range of temperature conditions (50-100 °C), pH levels (3-10), and extraction pressures. Extracted keratin will be purified from the extraction solvent by dialysis.
Expected outcomes: This research expects to optimize the keratin extraction process that allows the use of low concentrations of extraction chemicals. The research will also reduce the effect of extraction chemicals on cytotoxicity thus, will permit further use.