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Hanthana Pavura

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Alumni Association of the University of Peradeniya Ottawa Chapter - Canada

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PRESIDENT'S MESSAGE

Dear members and friends,

Our motto states, "together we march forward". In that spirit, it has always been a great pleasure to work with our fellow members and community friends to meet the objectives of the Alumni Association of the University of Peradeniya- Ottawa Chapter (AAUPOC). We, as an alumni association have demonstrated our resilience at this unprecedented time during a global pandemic by finding innovative ways to organize various events and activities virtually. Such endeavours helped us in keeping contact with our members and well-wishers, and to support our alma mater notwithstanding many challenges faced.

AAUPOC is committed in this year too as in the previous years to uphold our mission of supporting the alma mater in educational as well as welfare activities, and to foster social activities. Maintaining close friendships among the members of the AAUPOC and other Peradeniya alumni across the globe has been always in view. In order to meet our objectives, we are in the process of continuing our webinar series and organizing virtual events for our members, their families and for our community as a whole.

We have organized our first webinar of this year (4th in the series) on the 22nd of May with a significant attendance. A big thank you to the guest speaker, Dr. Dushyantha Jayaweera, the organizing team and the sponsors for their support in delivering a very informative webinar on the timely topic of "Current Status of Covid-19 Vaccination: Facts & Myths". In addition, considering the importance of physical and mental wellbeing of our members and the community during the Pandemic, the inaugural virtual Walkathon event organized by the AAUPOC was a great success. I devote my sincere gratitude for the dedicated and tireless work delivered by the event organizers, the generous support by the sponsors, donors and a large number of participants of the walkathon. With all your support, we are planning to expand our activities in the virtual format to pursue the objectives of our association.

During this difficult time, interdependence of our members and the community has been a great strength. The generous donations by our members and well-wishers have been significant for the AAUPOC Scholarship Program. We look forward to have your continuous support to help our alma mater at this most needed time.

The AAUPOC newsletter has been a great communicational and educational publication from its inception and for many years. I extend my heartfelt thanks to the Editor of the AAUPOC for this year and the editors of the previous years for continuing this great work.

I am excited to work with a dedicated Executive Committee (EC) of the AAUPOC. As a team we will continue with all the great work embarked on by the past committees, and would introduce new activities to foster our friendship as members and to help our alma mater.

I wish you and your families good health, strength and happiness!

Susantha Mohottalage

The President

AAUPOC

POTENTIAL OF SELECTED UNDERUTILIZED LEAFY VEGETABLES GROWN IN SRI LANKA FOR IMPROVING HEALTH BENEFITS

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Chronic diseases such as cancer, cardiovascular diseases and inflammation represent an increasing proportion of morbidity and mortality among people in Sri Lanka. Various research findings have demonstrated that changes in oxygen utilization in the body, and increased formation of reactive oxygen species[1] could contribute to these chronic diseases. Though human body is naturally equipped with antioxidant protection mechanism to cope with the harmful effects of reactive oxygen species, these endogenous antioxidant defense systems alone are not adequate to counteract the cell damage caused by the oxidative stress. Therefore, dietary intake of antioxidants could help increase protection against oxidative stress in the human body.

In addition, studies have shown that chronic inflammation has a link with progressive diseases such as cancer, neurological disease, metabolic disorder and cardiovascular disease. However, use of non-steroidal anti-inflammatory drugs as a common treatment for chronic diseases has several adverse side effects, especially gastric irritation, leading to the formation of gastric ulcers. Therefore, search for alternatives, including natural substances and phytochemicals with anti-inflammatory activity has been greatly increasing over the years. Moreover, epidemiological studies have provided convincing evidences that natural dietary compounds such as polyphenols and carotenoids present in certain foods possess many biological activities contributing to anti-inflammation. As a result, a great deal of research nowadays focuses on natural antioxidants available in a variety of plant-based food items. Leafy-green vegetables available in Sri Lanka, which are a class of under-exploited plants, may present valuable candidates as rich sources of natural antioxidants and help prevent the risk of chronic diseases, such as cancer and cardiovascular diseases among people.

Antioxidant properties

Leafy vegetables constitute a substantial nutritional properties of a balanced diet, and contain antioxidant vitamins and minerals. A study recently carried out at the Wayamba University of Sri Lanka on 34 leafy green vegetables revealed a remarkable variation in their antioxidant activities. These were evaluated for total polyphenols, carotenoids, total antioxidant capacity, reducing power, inhibition of lipid peroxidation and DPPH free radical scavenging[2].

Passion fruit (Passifloraedulis)leaves contain higher levels of antioxidants

Ranawara (Casiaariculata) has the highest flavonoids and carotenoids

Among the leafy vegetables that were investigated, *Kathurumurunga* (*Sesbania grandiflora)*,*Ranawara (Cassia auriculata)*,*Passion fruit* (*Passiflora edulis)*, *Kurinnan* (*Gymnem alactiferum)*and *Mella* (*Olax zeylanica)*,gave the highest antioxidant activities. In spite of the high consumer demand, the commercially grown and most commonly used leafy vegetables, such as *Gotukola*, *Mukunuwenna* and *Kangkun g*have shown comparatively lower antioxidant activities.

[1] A type of unstable molecule that contains oxygen and that easily reacts with other molecules in a cell. A build up of reactive oxygen species in cells may cause damage to DNA, RNA and proteins, and may cause cell death.

[2] Reducing power assay is a rapid screening method for measuring antioxidant potential in terms of absorption, and DPHH free radical scavenging is an accepted mechanism for screening the antioxidant activity of plant extracts.

The free radical scavenging ability of soluble and bound phenolic fractions of the antioxidant-rich leafy vegetables showed that both fractions exhibit the antioxidant potential towards free radicals and reactive oxygen species such as singlet oxygen, hydroxyl radical, nitric oxide radical and ABTS radicals[3].However, soluble extracts showed a higher content of phenolics and flavonoids than in the bound fraction.

Rutin is the common flavonoid found in leafy vegetables, and lutein and β-carotene are the commonly available carotenoids. Among the leafy vegetables studied, *Ranawara* had the highest rutin, lutein and β-carotene content while the leaves of Passion fruit showed the highest vitamin C content.

Anti-inflammatory Properties

Cellular infiltration, mediated by leukocytes, is an important aspect of the inflammatory response. During inflammation, leukocytes release lysosomal enzymes, including proteases as a part of their defensive role. These proteases cause tissue damage, and as a consequence trigger further the inflammation response. Damage to cell membranes will make the cell more susceptible to secondary damages by means of free radical-induced lipid peroxidation. Stabilization of the cell membranes may therefore, retard or inhibit the cell lysis and subsequent release of the cytoplasmic contents which, in turn, minimize the tissue damage, contributing to subside the inflammatory response. Therefore, substances that can protect the cell membrane against injurious cytoplasmic contents are important in inhibiting the progression of inflammation.

Inhibition of Hemolysis

Anti-inflammatory activity of six leafy vegetables, namely *Ranawara*, Passion fruit, *Kathurumurunga*, *Mella*, *Kurinnan* and *Gotukola* were tested using four *in vitro*-based assays namely, hemolysis inhibition, proteinase inhibition, protein denaturation inhibition, and lipoxygenase inhibition. It was observed that the leaf extracts of these six leafy vegetables inhibited the destruction of red blood cells and the release of their contents (Hemolysis). The percent inhibition of hemolysis by these leaf extracts with the concentration of25- 100µg/mL on dry weight basis was ranged from4% - 14.9%. Leaves of passion fruit and *Mella*) showed a higher inhibition levels.

Mella (Olax zeylanica) leaves have high anti-inflammatory properties

Inhibition of Protein denaturation

Denaturation of protein molecules due to inflammation process in conditions like arthritis is well documented. One of the main mechanisms of action of non-steroidal anti-inflammatory drugs is the protection against protein denaturation. Percent inhibition of protein denaturation by these six leafy vegetable types was ranged from36% to 61%. The leaf extract of *Ranawara* showed the highest inhibition level of 61%.

Inhibition of Proteinases

Proteinases of leukocytes play a significant role in the development of tissue damage during inflammatory processes. All six leafy vegetables showed a similar ability to inhibit proteinases. Proteinase inhibitory activity of these leaf extracts was in the range of 20.2–25.9%.

Inhibition of Lipoxygenase

Lipoxygenases are the key enzymes in the biosynthesis of leukotrienes. Leukotrienes play an important role in several inflammatory diseases, such as arthritis, asthma, cancer, and allergic reactions. The lipoxygenase inhibition by the

Kurinnan(Gymnemalactiferum) leaf extract showed high lipoxygenase inhibition capacity

[3]ABTS is frequently used by the food industry to measure the antioxidant capacities of foods

leaf extracts of the six leafy vegetables was within the range of 3.7–36.0%. The leaf extract of *Kurinnan* leaves showed an improved ability to inhibit lipoxygenase activity.

These findings revealed that all types of leaves possess anti-inflammatory properties at different levels, and the variation observed could be due to the differences in the composition and concentration of bioactive compounds which in turn generally influenced by the environmental and genetic factors.

Effect of cooking on nutritional and functional properties

Most leafy vegetables can be consumed in their fresh form, and some as cooked food. However, cooking methods such as boiling, steaming and frying may cause deterioration of bioactive constituents. Generally, polyphenols, carotenoids and antioxidant capacity of green leafy vegetables are significantly altered during cooking. Among the cooking methods evaluated, frying reduces the polyphenols, flavonoids, carotenoids, and antioxidant activities in all leafy vegetables, whereas boiling and steaming have shown varying effects on polyphenols, carotenoids, antioxidant and anti-inflammatory properties. The effect of cooking varied with the type of the leafy vegetables. Leaves of *Mella*, *Kathurumurunga* and Passion fruit showed a lower total polyphenol content in their cooked samples compared to raw samples. This indicates the breaking down of polyphenols in these leafy types during cooking. However, *Ranawara* leaves showed twice higher total polyphenol content in boiled and steamed leaves, compared to its raw form.

Bioaccessibility and bioavailablility

Bioaccessibility is a measure of the fraction of nutrients that are released from the food stuff matrix and become available for absorption from the gut. The bioaccessibility of a nutrient may depend on the food processing methods such as cooking. The term bioavailability describes the fraction of ingested nutrients or bioactive compounds that are digested, absorbed, and reached to the systemic circulation for metabolization through biochemical pathways.

Kathurumurunga(Sesbania grandiflora)

Bioavailability of bioactives in food depends on a variety of factors, including the release from the food stuff matrix during gastrointestinal digestion (bioaccessibility) and cellular uptake, metabolism, and further transport in the circulatory system. During the digestion process, food components are constantly exposed to different physicochemical and biochemical conditions and consequently, the bioavailability and bioactivity of the potential food bioactive molecules may get affected. From the food-derived substances found in the gut, the extractable fraction soluble in gastrointestinal media forms the bioaccessible fraction while non-released compounds (non-bioaccessible fraction) will be excreted in the feces.

Further, the bio-accessibility of phenolics, flavonoids, rutin, β-carotene and lutein and changes in antioxidant and anti-inflammatory activities in six edible leaves during simulating gastro-intestinal conditions has been investigated. It was found that the amount of dialyzable phenolics, flavonoids and carotenoids which potentially available for further uptake varied depending on the leafy type. Bioavailable phenolics after the gastric-phase, intestinal-phase and in dialysable fraction were in the ranges of 13.9–71.8%, 14.4–77.4% and 3.1–12.3% respectively when compared with their fresh form. Total antioxidant capacities and anti-inflammatory properties in the dialysable fractions were significantly lower than their original status.

Bioactives of *Gotukola* showed comparatively a higher bioavailability in all phases with respect to its original content. β-carotene seems more dialysable than lutein in all leaves studied. Higher rutin contents were found in both gastric and intestinal phases than in fresh leaves. Anti-inflammatory and antioxidant properties in each digestion fractions were varied among the leafy types. These results highlighted that gastrointestinal digestion may substantially affect the absorption of polyphenols and carotenoids present in leafy greens.

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Citrus fruits and brain health

Eating citrus fruit and drinking citrus juices can have a positive impact on brain health, particularly during aging, according to new research. A study published in *Frontiers of Neuroscience*, showed that citrus polyphenols have anti-inflammatory and anti-oxidative properties-both important for protecting brain tissues from damage, for example, due to aging or underlying health conditions.

Source: Frontiers in Neuroscience (https://www.frontiersin.org/articles/10.3389/fnins.2021.640648/full)

"WHEN DIET IS WRONG, MEDICINE IS OF NO USE. WHEN DIET IS CORRECT, MEDICINE IS OF NO NEED." – AYURVEDIC PROVERB

අඹ කැඩපත - THE MANGO MIRROR

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පැහැදිලි නිල් අහස පසුබිමේ ඇතිවිට මද සුළඟේ ලෙලදෙන අඹ මල් පොකුරු කොලුවා හැම විටම අමන්දානන්දයට පත්වන මනරම් දසුනකි. කොලුවාගේ රටේ ඒ සැනකෙළිය සෑම වසරකම මුල සිටම මකර සන්ක්‍රාන්තියත් සමඟින් ඇරඹේ. මලින් පිරීගිය අඹ ගසක් සම කල හැක්කේ අලංකාර වේලයකින් සැරසුනු රූමත් මනාලියකට හෝ ඔටුන්නක් හිස දරාසිටින තේජවන්ත රජෙකුටයි. පරිසර විද්‍යාත්මකව අඹ ධජධාරී විශේෂයක් ලෙස හඳුනාගැනේ. ඈත ක්ෂිතිජයෙන් මතුවන නැවක කුඹ ගස මුදුනේ රඳවා ඇති ධජය වෙරළේ සිටින්නෙකුට මුලින්ම පෙනෙන්නාසේ ජීවීන් අතර කැපීපෙනෙන පාරිසරික කාර්යයන් ඉටුකරන්නෝ ධජධාරීහු ලෙස හඳුනා ගැනෙති.

ඒ 2016 වසරයි. වසර ඇරඹුනේ දැඩිනාපයෙන් දැවෙන වියලි කාලගුණයක්ද සමඟිනි. දිවාකල මුළු අහස අරා හිරු සිය ආධිපත්යය පැතිරවූයේ වියරුවෙනි. ඉන් ලද අවසරයෙන් අවදිවූ අඹ ගස් මලින් බරවිය. කලින් කලට සුලබ වන ජෛව විවිධත්වය සාමූහිකව උත්සවාකාරයෙන් සැමරීමට පෙරමඟ බලාසිටින කොලුවාට එය සුබාරංචියක් විය. වසර කිහිපයක සිට කුමන හෝ අයුරකින් සොබාවයෙන්ද සංස්කෘතියෙන්ද ඔවුන්ට උරුම වූ ජෛවවිවිධත්වය මතුකොට පෙන්වීමේ කටයුත්තකට කොලුවාත් ඔහුගේ මිතුරු කැලත් යොමුවී සිටිනි. ඔවුන් විසුවේ ජෛව විවිධත්වයෙන් පොහොසත් සරුසාර පෙදෙසක වුවත් පොදු සමාජ ජීවිතය එතරම් රසවත් වූවක් නොවීය. ජෛවවිවිධත්වයේ සාරය එහි රසයයි. ඒ කෙරෙහි උනන්දුවන අවධානය දෙන්නාට ඇය සතු සියළු රස විඳින නිර්ලෝභීව ත්යාග ලෙසින් පුදදීමට ප්රකෘතිය සැදී පැහැදී සිටින බව කොලුවා ඉදුරාම දනී.

අඹ ගෙඩිය හදවත් හැඩැතිය. අයෙක් සිය හදවතෙහි උපන් ප්රේමය හෙළිකරනු වස් රතුරෝස මල් දෙන්නාසේ ඈත අතීතයේ එම කාර්යය පැවරී තිබුනේ අඹ වලට යැයි කිවහොත් ඔබ එය කවට වදනක් ලෙස සලකනු ඇත. එහෙත් ඔවුන්ගේ බසෙහි ඇති "අඹ යහළුවා " යන වදන එයට නිදසුනකි. ඔවුන් සශ්රීකව සිටි රාජධානි යුගයේ සෑම රජෙකුටම අඹ උයනක් විය. දුර්භාග්යය උදාවූයේ යටත් විජිත ස්වාමියා සංග්රාම උපක්රමයක් ලෙස සියළු මිනිස් ජෛව විවිධත්ව සබඳතා මුළිනුපුටා දැමීමෙනි. 'පලතුරු ලොවේ රජු යනු අඹ වලට අනවර්ථ නාමයකි. එපමණක් නොව අඹ රජුන්ගේ පලතුරද වේ.

රූපය: නමක් දනොමැති අඹ වර්ගයක්, 2009

රූපය: මී අඹ පොකුරක්, වේයන්ගොඩ-2009

ගෙදයන්, විවෘත බිම් කොපමණ අඹ විවිධත්වයක් දරා සිටියද කිසිවෙක් ඒ ගැන උනන්දුවක් නොදැක්වීම කොලුවාට කණස්සල්ල ඇති කලේය. පූජනීය වූත් ශුද්ධවූත් පලතුරක් ලෙස මිනිස් සන්තානයේ විශේෂ තැනක් අඹ වලට හිමිවී ඇති අසල්වැසියාගේ රාජ්යයේ දහසකට වඩා වැඩි ප්රභේද සංඛ්යාවක් හඳුනාගෙන ඇත.

2009 වසරේ මැයි මාසය ඒ ඓතිහාසික සිදුවීම සනිටුහන් වූ මාසයයි. ඔවුන් පළමු අඹ උත්සවය එදින ඇරඹූහ. එය නම් කරනු ලැබුවේ පාරිසරික අඹ උත්සවය යනුවෙනි. දින කිහිපයක් තුළ කුඩා ප්රදේශයකින් අවම උත්සාහයකින් සපයාගත් එකිනෙකට වෙනස් අඹ වර්ග 40 කොලුවාට මහමෙරක් තරම් විය. මුළු රටම සැළකුවහොත් අඹ වර්ග කොපමණ ඇත්දැයි සිතෙන විට කොළුවාට ඇතිවූයේ ආනන්දජනක හැඟීමකි. දැන් කොළුවාට අළුත් රාජකාරියක් පැවරී ඇත.ඒ සෑම අඹවාරයකම මකර සංක්රාන්තියේ සුබපැතුමත් සමඟ නොදන්නා, නොහඳුනන විවිධත්වය හඹා යාමයි.

ඔවුන්ගේ රටේ මී අඹ නමින් හඳුන්වන ප්‍රමාණයෙන් කුඩා එහෙත් රසයෙන් අනූන අඹ වර්ග ගණනාවක් ඇත. මී අඹ වෙළෙඳපොලෙන් මිලදී ගත නොහැක්කේ මිලක් නියම කිරීමට එය අසමත් බැවිනි. කොලුවාට අනුව මී අඹ රසබලන්නෝ වවුලන්, ලේනුන් හා පලතුරු ආහාරයට ගන්නා පක්ෂීන්ය. ඔවුන්ට ඒ සඳහා ශුද්ධ වූ අයිතියක්ද ඇත. ඒ මී අඹ ප්‍රචාරණය කරන්නනෝද ඔවුන් බැවිනි. මිනිසුන් මෙන් කාලයෙන් දූෂිත නොවූ පැවැත්ම සඳහා ප්‍රකෘතිය වෙත යොමුවෙනවා හැර වෙනත් විකල්පයක් නොමැති මේ අහිංසක සතුන්ගේ රස විඳීනය කොලුවාගේ ප්‍රීතිය පිණිස විය. වලු අඹ තවත් එවැනි අඹ වර්ගයකි. මී අඹ වලට වඩා ප්‍රමාණයෙන් විශාල වලු අඹ වල ප්‍රකට ලක්ෂණය නම් වලුබරව පැවතීමයි. ඉදුනු විට ඉතා මිහිරි වලු අඹ අමු කාලයේ දී ව්‍යංජන සඳහා ද සුලබව යොදා ගැනේ.

ඇටඹ, වේයන්ගොඩ

කොලුවාගේ රටේ භූවිෂමතාවය සැලකූ විට එය කොණ්ඩ කැවුම් ගෙඩියක් වැනිය. රට මැද කඳුකරය කැවුම් ගෙඩියේ කොණ්ඩය මෙනි. මධ්‍ය කඳුකරයේ පාරිසරික වාසස්ථාන බොහොමයකි. ඒ වටා ඇති අතරමැදි කලාපීය කඳු පෙදෙස් ආශ්‍රිතව ඇති සිසිල් දේශගුණයේ හොඳින් පල දරන ගිරා අඹ නම්වූ තවත් රසවත් අඹ ප්‍රභේදයක් හමුවේ.

ගිරා අඹ, කුරුණෑගල- 2011

ගෙඩියේ පහල කෙලවරේ පක්ෂියෙකුගේ හොටක් ලෙසින් නෙරා තිබීම "ගිරාහොටක්" ලෙස දුටු අයෙක් එයට ගිරාඅඹ යන නම තැබුවා වන්නට පුළුවන. අමු ගෙඩිය අලු කොළ පැහැ ගිරා අඹ කොතරම් ඉදුනද මුලු ගෙඩියම කහ පැහැ නොවේ. ඉදුනු ගිරා අඹ හඳුනා ගැනීමට කෙනෙකු පොඹවන්නේ ඉදෙන්ම ඉන් වහනය වන මනරම් සුගන්ධයයි. ගිරා අඹ වලින් වහනය වන ලාක්ෂණික සුවඳ කොලුවා වෙන කිසිදු අඹ වර්ගයකින් අත්දැක නැත. ඒ එතරම් සිත වසඟ කරවන සුළුය. පහත රට තෙත් කලාපයේ ගිරා අඹ එතරම් හොඳින් පල නොදරයි.

ඔවුන් කොහු අඹ ලෙසින් නම් කරන්නේ කෙඳි ගතිය වැඩි අඹ වලටයි. මුළු රටපුරාම කොහු අඹ පැතිරී ඇතත් සුලබව හමුවන්නේ අතරමැදි කලාපයේයි. ලෙඩ රෝග, කෘමිහානි නොමැති කොහු අඹ ඉදීගෙන එනවිට කපා ලුණු, මිරිස් හෝ ගම්මිරිස් සමඟ අච්චාරු ලෙස අළෙවි කොට අතමිට සරු කර ගන්නා අය සිටිති. ඒ හැරුණු විට චටනි ජෑම් වැනි කල්තබාගත හැකි ආහාර සැකසීමටද කොහු අඹ වඩාත් යෝග්ය වේ. කොහු අඹ අතරින් කළු කොහු අඹ ශ්‍රේෂ්ඨ වේ.

සුලබ දිගටි කොහු අඹ මෙන් නොව කළු කොහු අඹ වටකුරු හැඩැතිය. කළු කොල පැහැවේ. ගෙඩියේ කෙඳි පොල් කෙඳිමෙන් ඝණකමිය.මාංශල කොටස් දීප්තිමත් කහ පැහැවේ. පිහියකින් කපා කෑමට අවශ්ය නම් අඹ කැපීමට නියුණුව මුවහත් කල පිහියක් අවශ්ය වේ. එසේ වුවද කපද්දී ශබ්ද නැගේ. ඉදුනු කළු කොහු අඹ වලටම ලාක්ෂණික වූ වෙනත් කිසිදු අඹ වර්ගයකට නොදෙවෙනි ප්‍රනීත රසයක් ඇත. ඉතාමත්ම දුර්ලභ අඹ වර්ගයකි. කොලුවාට ජීවිත කාලය තුලම හමුවී ඇත්තේ කළු කොහු අඹ ගස් තුනක් පමණි.

දම්පර අඹ, වතුපිටිවල- 2010

දම්පර අඹද දේශීය අඹ ප්‍රභේදයකි. සුදු හා කළු යනුවෙන් ආකාර දෙකකි. සුදු දම්පර ගසෙහි අලංකාර රූපාකාරයට ප්‍රියකරන්නෝ එය සිය ගෙමිදුලෙහි වවා තිබෙනු කොලුවා දැක ඇත. සුදු දම්පර හොඳින් ඉදුනු විට ඉතා සුමිහිරි රසක් ඇත. කළු දම්පර අමු ගෙඩි තද කොළ පැහැතිය. තරමක් විශාල කිකිළි බිත්තරයක හැඩය ගනී. මාංශල කොටස් මෘදුය. ලා රෝස පැහැතිය. ඉතා මිහිරි වේ. ගස් පිරෙන්නට පල දරයි.

කලින් කලට හඳුන්වා දුන් වාණිජ අඹ ප්‍රභේදයන්ද කිහිපයකි. කර්තකොලොම්බන් නම් ප්‍රමාණයෙන් විශාල, වියලි කලාපයට වඩාත් උචිත ප්‍රකට අඹ ප්‍රභේදයක් ඇත. තෙත් කලාපයට වඩාත් උචිත ගිරා අඹ,දම්පර අඹ, වෙල්ලෙයි කොලොම්බන්, විලාඩ්,වලු අඹ වැනි ප්‍රභේදයි.

දිවයිනේ උතුරු පෙදෙසේ සුලබ නීලම් අඹද වානිජ අඹ ප්‍රභේදයක් ලෙස සැලකිය හැක. අමු කාලයේ නීලම් නිලට හුරු තද කොළ පැහැ බැවින් එලෙස හඳුන්වනවා විය හැක. ඉදෙන් ඉදෙන්ම ලෙල්ල හැකිලී ඇතුළත මාංශල කොටස් ආරක්ෂා වීම නීලම් අඹයට ලාක්ෂණික ගුණයකි. නීලම් අඹයේ ප්‍රකීර්ත ආවේණික "හිනි" ඇඹුල් රසයක් ඇත. මාංශලය ලා කොළ පැහැවේ. පීටර් පසාන්ඩ් , දිල් පසාන්ඩ් වැනි අඹ වර්ග අසල්වැසියාගෙන් ලද තිළිණයන්ය. උතුරු පෙදෙසෙන් එන අම්බලාවි අඹද ඉතා රසවත් අඹ ප්‍රභේදයකි. ගෙඩිය පහළ කෙළවරින් ඇතුළට නැවුනු දිගටි සවභාවයකි. ගසෙහි අතු නමා වැටී ඇති ආකාරයේ ලාලිත්‍යයක් ඇත. හඳුන්වා දුන් සුල්තානා අඹ හා සුලබ පෙට්ටි අඹ අතර රසයේ සමානකමක් ඇත. සුල්තානා අඹ පෙට්ටි අඹ වලට වඩා මදක් ප්‍රමාණයෙන් විශාලවේ. අමු කාලයේ දී තද ඇඹුලක් ඇති සුල්තානා අඹ ව්‍යංජන සැකසීමට ඉතා අගනේය. පෙට්ටි අඹ ඉදුනු විට මුළු ගෙඩියම කහ පැහැවේ.

සුල්තානා අඹ, ගල්ගමුව- 2012

ටොම් ඊජේසී අඹ, එල්ලාවල ගොවිපල, ගල්කිරියාගම

වානිජ අඹ ප්‍රභේද අතර ඉහළින් වැජඹෙන්නේ මෑතක දී ජනප්‍රිය වූ ටොම් ඊ ජේ සී අඹ ප්‍රභේදයයි. ඉහළ අපනයන වටිනාකමක් ඇති ටොම් ඊ ජේ සී අඹ ගෙඩියක සාමාන්‍ය බර ග්‍රෑම් ෭෦෦ ඉක්මවයි. ප්‍රකීර්ත රසයෙන් යුතුවේ. ඉදුනු අඹ වානිජ භාවිතාවන්ට හොඳින් ගැලපෙන සේ කල්තබා ගැනීමේ හැකියාවෙන්ද යුතුවේ. ටොම් ඊ ජේ සී අඹයේ උත්පත්ති කථාවද ඉතා රසවත්ය.

කොලුවාට හමුවූ විසිතුරුම අඹය නම් බණ්ඩාරනායක බීජ රහිත මී අඹයි. සත්කෝරලවාසීන් මේ අඹ හඳුන්වනු ලබන්නේ මුඩලියර් මී අඹ යනුවෙනි. පල නොමැති විට වුවත් මුඩලියර් මී අඹ ගසක් හදුනාගත හැක්කේ අතු ආසන්නයෙන් ඇහිරී තිබීමත් ඝන කොළදාවක් තිබීමෙනුත්ය. පත්ර සිහින් දිගැටි හැඩැතිවේ. මෙම අඹ ප්‍රභේදය මහමුදලි සොලමන් ඩයස් බණ්ඩාරනායක මහතාගේ හොරගොල්ල වලව්වේ ගෙවත්තෙන් සොයා ගැනුනි. එතුමන්ට තෑගි ලෙස විදෙස් රටකින් ලැබුනු අඹ ප්‍රභේදයකි. මිදි ගෙඩියකට වඩා මදක් විශාල මෙම අඹ සත්‍ය බීජ නොදරයි. ඇතුළත ඇති බීජයේ බීජ පත්‍ර නොමැත. පොත්තක් වැනිය. අතු වල අඹ පොකුරු එල්ලී ඇත්තේ ගඩුගුඩා ගසක ගෙඩිවැල් එල්ලෙන්නාක් මෙනි. ඉදහිට කලාතුරකින් සත්‍ය බීජ දරන ගෙඩියක් දෙකක් හමු වුවද කිසිවෙක් ඒවා පැලකිරීමට උත්සාහ දරා ඇත්දැයි දැනගන්නට නැත. විසිතුරු අඹ ප්‍රභේදයක් ලෙස ප්‍රවර්ධනය කිරීමට විභවයක් ඇතත් බද්ධ පැල සපයා ගැනීමට අසීරුය. අඹ උත්සව වලදී සහභාගිවන්නන් විශ්මයට පත්කිරීම සඳහා මෙම මී අඹ තමාම ඉඩ සලසා ගනී. මේ අඹ රස බැලීම වනාහී වෙනස්ම අත්දැකීමකි.

කොලුවාගේ රටේ කතිකාවක්ද පරිසර පද්ධතියේ නිධානයන් සෙවීමේ පොදු අවියාජ ක්‍රියාවක්ද නොමැති බැවින් මිනිස් පැටවුනට මේ අඹ රස බැලීමට ඉඩහසර නොමැතිවීම අභාග්‍යයකි. වැඩිහිටියෝ එකිනෙකා පරදවමින් අනෙකාගේ ආශාව හඬවයාමේ හැමවිටම පරාජය පමණක් උරුම වන ක්‍රීඩාවේ ඇලී ගැලී සිටිති. මේ සුවිශේෂ මී අඹ සම්බන්ධයෙන් නම් වවුලෝ මිනිස් පැටවුනට වඩා වාසනාවන්තය. වැඩිහිටි මිනිසුන් ඔවුන්ගේ දරුවනට දීමට අඹ සොයන වෙළෙඳපොලේ මුඩලියර් මී අඹ සොයාගත නොහැක්කේ ඊනියා මිල ක්‍රමය පරිසර වටිනාකම් පිළිබඳ නැකීමක් නැති බැවිනි.

සිමන් අඹ, කිරිඳිවැල- 2009

ප්‍රදේශ අනුව නම් ලද අඹ වර්ගද කිහිපයකි. යාපනේ අඹ, පිළිකුත්තු අඹ, බටඅත අඹ, වව්නියා අඹ ඒවාට නිදසුන් වේ. වර්ණවත් අඹ ප්‍රභේදයක් වන විලාඩ් තවත් අඹ ප්‍රභේදයකි. රට අඹ,පැපොල් අඹ,පිටි අඹ, සීනි අඹ යන නම් වලින් ප්‍රාදේශීයවද වෙලලෙයිකොලොම්බන් ලෙස විද්වතුන්ද හඳුන්වන අඹ ප්‍රභේදය දිවයින පුරා පුළුල් ව්‍යාප්තියක් ඇත. දිනක සතිපොළක හමුවූ වෙළන්දෙක් නියම වෙල්ලෙයිකොලොම්බන් ලෙස කර්තාකොලොම්බන් වලට සමාන රසවත් අඹ ප්‍රභේදයක් හඳුන්වා දුන් අයුරු කොලුවාට මතකය. සිමන් අඹද කොලුවාට හමුවූ විසිතුරු අඹයකි. හිනි අඹ, රසය සලකා නම් ලද රසවත් අඹයකි.

ඇපල් අඹ යනුවෙන් හඳුන්වන අමුවෙන් ආහාරයට ගතහැකි අඹුල් රසින් අඩු අඹ ප්‍රභේදයක්ද ඇත. කනිකාවක් ඇත්නම් ලෝක පරිමාණයෙන් සුපිරි අඹ ප්‍රභේදයක් ලෙසින් වැජඹෙන තායිලන්තයේ "නම් ඩොක් මායි" අඹයට කරට කර සටනක් දීමට ඇපල් අඹයට හැකි බව කොලුවාට සහතිකය.ඇටඹ කොලුවාගේ රටට ඒක දේශික විශේෂයක් ලෙස සැලකේ. ප්‍රමාණයෙන් විශාල අඹ වර්ග

ගණනාවක් ඇතත් ඒවා වෙනස්කම් නොසලකා ‘පොල් අඹ‘ යන පොදු නාමයෙන් හඳුන්වයි. යටත් විජිත හාම්පුතා ලබාදුන් ආහාර සුරක්ෂිතතාවයම අරමුණුකරගත් සටන් පාඨය හඹායන කොලුවාගේ රටේ ජීවත්වීමට පෙව විවිධත්වය මවන සියුම් වෙනස්කම් පිළිබඳ සංවේදීතාවයක් අවශ්ය නැත. ඉහතින් දක්වා ඇත්තේ කොලුවාට හමුවූ අඹ ප්රභේද කිහිපයක් පමණි.විවිධ අඹ විවෘත අවකාශයේ අන්යෝන්ය පරාගනයෙන් ජනිත වූ මිශ්ර ලක්ෂණ ඇති නව අඹ ආකාරයන්ද බොහොමයකි. හැදෑරීමක් නොමැති බැවින් නමක් නැති සෑම අඹයක්ම හඳුන්වන්නේ ‘වල් අඹ‘ යන නමිනි.

රසයෙන්ද ගුණයෙන්ද අනූන මේ සොබාදහමේ තිළිනයන් එලෙස නොසැලකිලිමත් ලෙසින් හැඳින්වීම කොලුවා තුළ වරදකාරී හැඟීමක් ඇති කලේය. ඉතින් දැන් කොලුවා සැරසෙන්නේ හමාර කීමටයි. සොබාවෙන් ගැලවීමට මිනිසා නිර්මාණය කරගත් පලිහ සංස්කෘතියයි. ඇතැම් විට වෙස්මුහුනක් වන එය විටෙක කැඩපතක් ලෙසද හැසිරේ. එය සොබාවයත් මිනිසාත් අතර ඉඩක් නිර්මාණය කරයි. සංස්කෘතික කැඩපතේ කඩතොලු නැති දීප්තිමත් ප්රතිබිම්බයන් වේ නම් කනිකාව සක්රිය වී මිනිසුන් සතුටින් වෙසෙනු ඇත. කොලුවාගේ රටේ ඔවුන්ම නිර්මාණය කරගත් කැඩපතක් නොමැත. ඔවුන්ගේ කැඩපත යටත්විජිත හිමියා විජිතය හැර යන විට දමාගිය මේවන විට ඉරිතැලී කැඩී බිඳී ගිය අඛලන් කැඩපතකි. එයට තවදුරටත් පැහැදිලි ප්රතිබිමඛ නිපදවිය නොහැක. එය පිලිසකර කිරීමටද නොහැකි තරමටම කඩතොළු වී ඇත.

නව කැඩපතක උවමනාව කොලුවාටත් මිතුරන්ටත් දැනී කලක් ගතවී ඇත. යටත්විජිත හිමියාගේ කැඩපත වියුක්ත එකකි. ඔහුට සිය විජිතය වියුක්ත නොවන අයුරින් වටහා ගැනීමට හැකියාවක් මෙන්ම උවමනාවක්ද නොවීය. එහෙත් දැන් කොලුවා සහ පිරිස ඔවුන්ගේ පෙව විවිධත්වයෙන් කැඩපතක් නිර්මාණය කර ගැනීමට අත්හදා බැලීම් කරති. එහි මුල් පියවර තැබීමට අඹ තෝරා ගැනෙන්නේ දීර්ඝ හැදෑරීමකින් පසුවයි. දිවයින පුරා සෑම තැනම පැතිරී ඇති සියල්ලන්ම ප්රිය කරන පලතුරක් වීමත්, පුළුල් විවිධත්වයක් ඇසුරු කිරීමත් සහ තවත් බොහෝ කාරනා එයට හේතුවිය. අඹ විසිතුරු සංස්කෘතික පලතුරකි. කැඩපත නිර්මාණයේ ප්රධානම ක්රියාකාරකම ප්රකෘතියෙන් නිලිනවූ විවිධත්වය උත්සවාකාරයෙන් සැමරීමයි. සෞන්දර්යයන් හා රස වින්දන බෙදාහදා ගැනීමයි. එක්ව නිර්මාණයකරනයෙහිද නවීයකරණයන්හිද යෙදීමයි. වගාකිරීමයි. හැදෑරීමයි. අත්දැකීම් වෙනත් පලතුරු හා ආහාර බෝග ප්රවර්ධනය සඳහා යොදාගැනීමයි. ඔබටත් ඒ සඳහා යමක් කල හැකිවන්නට පුළුවන. අප සාර්ථක වනු ඇත. එවිට නිර්මාණය වනු ඇත්තේ අපට රිසි අයුරින් අපේ යථාව පිළිබිඹු වන අපේම කැඩපතයි.

Mushrooms lower the risk of Cancer

Higher mushroom consumption is likely to be associated with lower risk of cancer, according to a new Penn State study, published on March 16, 2021 in Advances in Nutrition. Analyzing data from more than 19,500 cancer patients, researchers explored the relationship between mushroom consumption and cancer risk. Mushrooms are the highest dietary source of ergothioneine, which is a unique and potent antioxidant and cellular protector. The team's findings show that these super foods may help to protect against cancer.

(Source: https://www.sciencedaily.com/releases/2021/04/210421200133.htm)

"THE DOCTOR OF THE FUTURE WILL NO LONGER TREAT THE HUMAN FRAME WITH DRUGS, BUT RATHER WILL CURE AND PREVENT DISEASE WITH NUTRITION." – THOMAS EDISON, INVENTOR AND BUSINESSMAN

NEUROMODULATION AS A CLINICAL PROCEDURE – HOW FAR SHOULD WE GO WHEN PERSONHOOD IS AFFECTED?

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(An Alumnus of the University of Colombo, Faculty of Science)

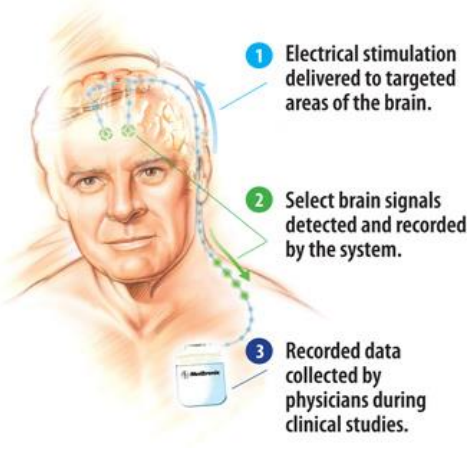
"Thou canst not touch the freedom of my mind" – John Milton (in 1634)

The International Neuromodulation Society defines therapeutic neuromodulation as the alteration of nerve activity through targeted delivery of a stimulus, such as electrical stimulation or chemical agents, to specific neurological sites in the body. We know that a cardiac pacemaker corrects abnormal heartbeats. Similarly, neuro-modulation therapies help to re-establish normal function of the nervous system. For example, neuronal diseases and disorders could be treated by means of electrical stimulation. These treatments cover movement disorders in Parkinson's disease, suppression of epileptic seizures, severe psychiatric disorders like depression and obsessive-compulsive disorder, cluster headache and chronic pain. There are many other applications of neuromodulation in clinical settings including, spinal cord stimulation. Using medical procedures for matters related to the brain and the nervous system have created concerns in people because it is thought by many that it could affect one's personhood.

Personhood is the state or period of being a person while personality is a set of qualities that make a person (or thing) distinct from another. The term self refers to the composite of your experiences and observations as a person. These include self-consciousness, responsibility, planning of the individual future, and other similar dimensions. Agency, autonomy, and a control of thoughts and actions are important elements of personhood. That is the capacity of individuals to act independently and to make their own free choices. Therefore, one may consider information related to the brain to be very intimate and private.

How should we assess these new technologies and clinical procedures which have the potential to change personality and society? We are not medical experts. But, we could try to be as well-informed as possible if and when we have to make decisions regarding the use of neuromodulation to treat a brain related issue.

Balancing risks with benefits is a fact of life. All medical disciplines are supposted to treat patients the best possible way, while trying to minimize the chances of jeopardizing the patients' lives by the interventions; such should be applied to neuromodulation as a clinical procedure.



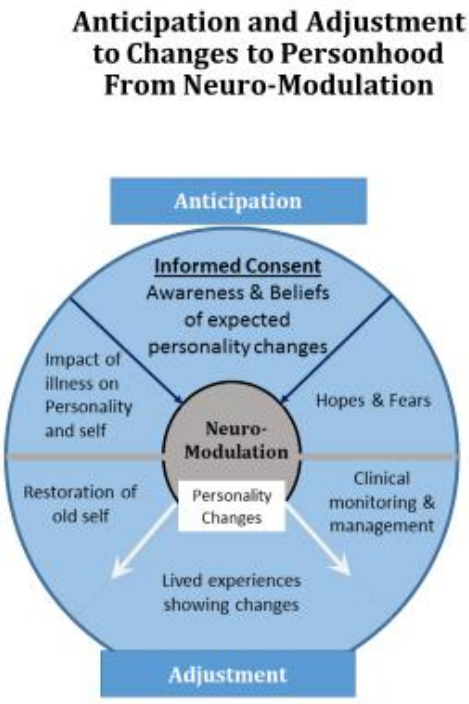
When the risks are well known the assessment could be done with confidence. When the risks are unknown it is difficult to decide whether surgical brain intervention should be undertaken for one's self or a family member for improving the quality of life. Under such circumstances one may decide on it's urgency, while making the extra effort to become as informed as possible. Success in surgical interventions could depend on many factors. In the end, it should be a personal decision of what is prudent for yourself and your family members.

The technology used for neuromodulation generally has two functions. The first function is manipulating brain activity by applying electrical or optical stimuli. Such interventions could result in changes to what we may regard as the fundamental characteristics of that individual. The second function is recording signals from the brain and "translating" them into technical control commands. Through recent advances brain signals can be tracked digitally, thanks to surgically implanted electrodes in the brain and an approved device in the chest (see Figure from Medtronic Canada). However, these latest inventions may not be available to the physician you may have to consult if the need arises.

For the practice as a whole, it is a question of ethics and justice as to the nature and extent of changes which should be allowed and under what conditions this should happen. CBC discussed this technology in an article last December. Ethical issues emerge in the context of the technology used with an intent to increase the *quality of life* for a person if risks to personhood is implicated. The Canadian Medical Association provides guidelines for both healthcare professionals and patients and their family members dealing with medical issues

(e.g. Guide for Parkinson's disease).

The following figure display areas of focus for a patient before and after a neuromodulation (It has been adapted from the work of Thomson et al. on Deep Brain Stimulation).



Anticipation before a neuromodulation

i. **Impact of illness on personality and self***:* Someone's poor quality of life because of a medical condition could drive him/her to seek neuromodulation for relief. They may be willing to risk side effects and negative impacts on their personality if their overall quality of life improves.

ii. **Informed Consent - Awareness and beliefs about expected personality change**: Patients should be made totally aware of potential risks, including personality changes, by their physicians (Consent: A guide for Canadian physicians). This is the essence of Informed consent. The patient must be given an adequate explanation about the nature of the proposed investigation or treatment and its anticipated outcome as well as the significant risks involved and alternatives available. The information must help the patient to reach an informed decision. In situations where the patient is not mentally capable, the discussion must take place with the substitute decision maker who may be a family member.

iii. **Hopes and fears:** The introduction of new medical treatments based on invasive technologies has often been surrounded by both hopes and fears. A new intervention gives hope as it may provide a cure for the disease or impairment at hand; or as alleviation of symptoms. But, fear arises since an invasive treatment involving implanting a medical device can result in unknown complications. One could worry about hardware failure and undesirable medical consequences.

Adjustment after a neuromodulation

(i) **Restoration of the old self***:* Regaining the things one could have done before the illness is an important part of any therapy. One may even endure new risks to make this happen.

(ii) **Lived experience of Personality Change:** Some signs of changes are the following: Undermining sense of self, agency and self-determination; Impact on self, agency, identity and personhood; and problems in assessing the origin of an emotion. Psychological distress could occur. Changes in autobiographic memory may affect sense of self or identity**.** In the end, what is acceptable would be a personal choice.

(iii) **Clinical management of personality changes**: Follow-up of clinical care with ongoing communication of risk is important. Physicians can now track patient brain signals and correlate these with patient-recorded actions or experiences, such as symptoms, side-effects, or medication intake. This enables more personalized, data-driven

neurostimulation treatment (e.g., See Medtronic Canada Percept™ PC Deep Brain Stimulation (DBS) system with BrainSense™ Technology).

The selling point for neuromodulation is that it often leads to a substantial improvement in the quality of life. Yet, this may come at a cost, because these interventions change the brain and its functions —either as a desired result of therapy, or as an unwanted side effect. In extreme cases, interventions in the brain can irreversibly alter a patient's personality and character. Here, we discussed how far one should go when cognitive and emotional alterations of a person could result from an intervention. A broader discussion about ethics, autonomy, commerce, society and justice in these brain interventions calls for closer examination of ethical guidelines and legal doctrine.

Finally, how you assess personhood depends on your values and beliefs of what is important for you as a person. May you be able to make the best choice if you ever have to face such situations.

Photo Credit – Deepani Waidyaratne

"SING A SONG OF SEASONS; SOMETHING BRIGHT IN ALL, FLOWERS IN THE SUMMER, FIRES IN THE FALL." – ROBERT LOUIS STEVENSON

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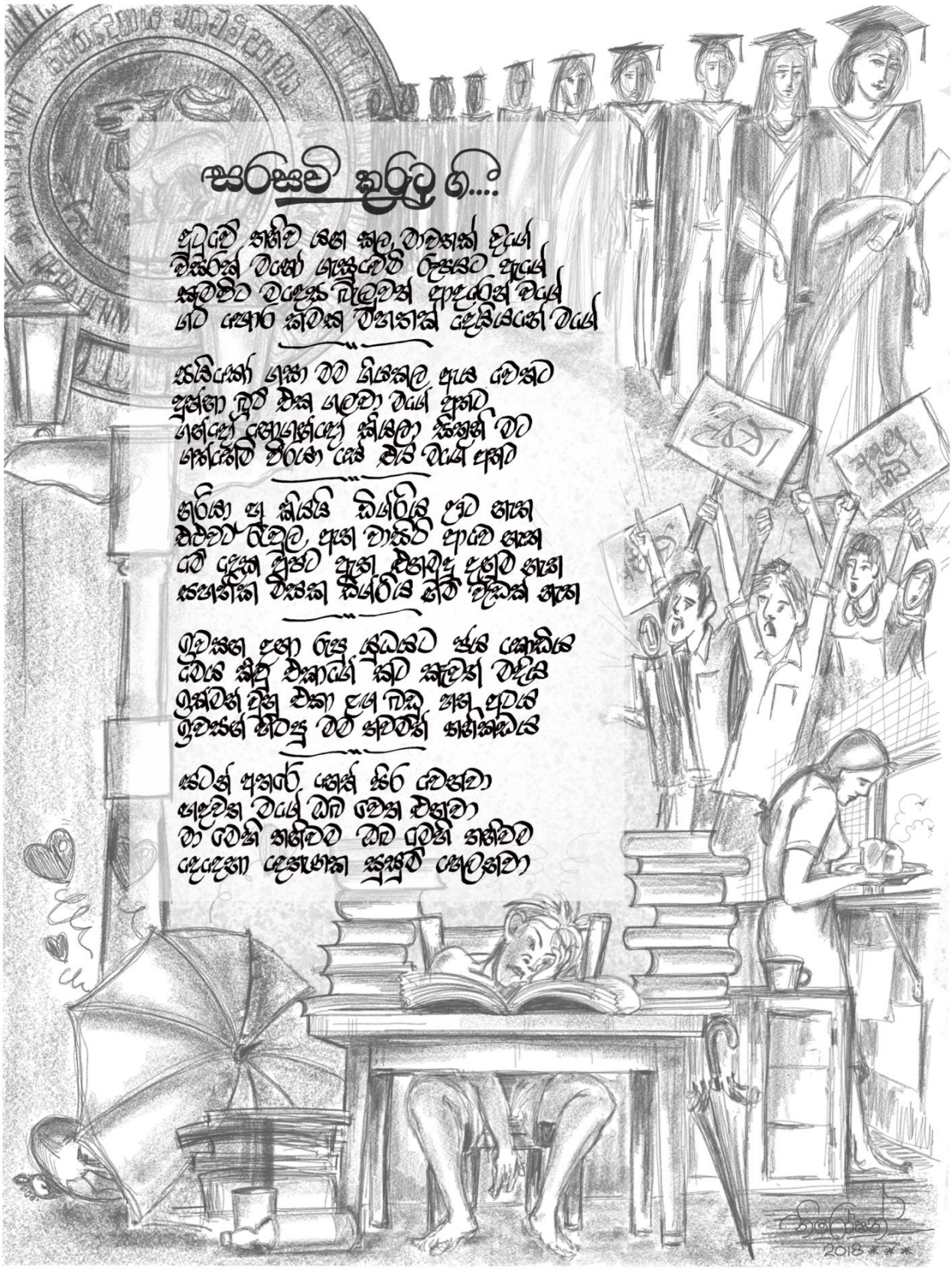
Niroshan Thanthrige (PhD)

(An Alumnus of the University of Peradeniya, Faculty of Veterinary Medicine)



Please note that the poems were extracted from tabletops and walls of various places on campus.

LITTLE EXPECTATIONS

Kumudini Nicholas, B. Sc. (Hon.), M. Sc.

(An Alumna of the University of Peradeniya, Faculty of Science)

If you would be like the last bloom of summer,
I would guard it with my life,
Preventing a link to its afterlife,
Hold it close to my heart, to mimic a glorious mid-summer.

With the passage of time,
If you would stay till the end of my time,
My embrace would cheer your mind
Like a garland of flowers, then, forever you might be mine.

But, if you would fall off the stem, with little or no sign of sorrow,
I would cry till the end of my days, like a wounded sparrow,
Shivering until its death, because there would be no tomorrow.

Yet, if you would reappear like the moon on a dark nightly sky,
I would sing my songs of sorrow,
And let you fly far away into heavens, beyond the blue empty sky.

Hoping to meet again, when we pass each other in the sky-high...

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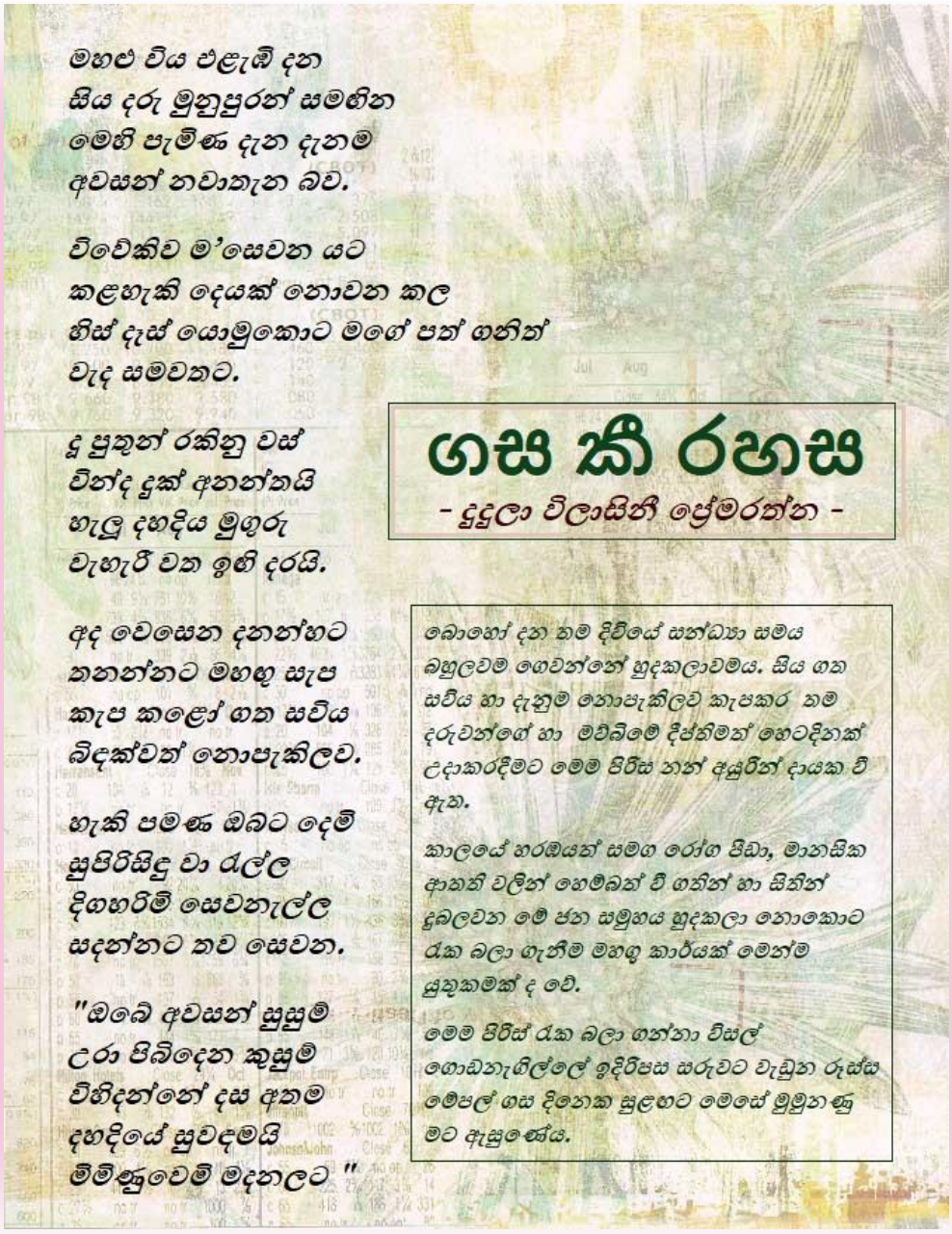
Dudula Vilasini Premaratne, Dip (Physiotherapy) SL, Dip (Nursing) Canada, MCSP UK



Think twice before using single-use plastics

Microplastics are plastic particles smaller than 5 millimeters, and could take decades or more to degrade fully. Scientists found that microplastics are everywhere: in deep oceans; in Arctic snow and Antarctic ice; in shellfish, table salt, drinking water and beer; and drifting in the air or falling with rain over mountains and cities. Scientists believe that in worst cases, people might be ingesting microplastics equivalent to a mass of a credit card a year; however, researchers are yet to understand the potential harmful effects of microplastics on humans.

(Source: Nature Podcast. https://www.nature.com/articles/d41586-021-01373-5)

HOW TEMPERATURE FLUCTUATION OVER THE COURSE OF A DAY INFLUENCES DENGUE TRANSMISSION

Dr. N.D.B.Ehelepola (MBBS)

Teaching (General) Hospital- Peradeniya, Sri Lanka.

(An Alumnus of the University of Peradeniya, Faculty of Medicine)

Dengue is a viral fever. A small percentage of dengue infection results in severe illness and deaths. Globally, an estimated 390 million dengue virus infections occur every year, mostly in urban areas of tropical and subtropical regions. Dengue is spreading to other regions as well. The number of annually reported new dengue cases per 100,000 people in Sri Lanka is among the highest in the world. There is no specific drug for dengue fever. Recently, a vaccine was developed to prevent dengue fever in humans. However, this vaccine was found to be less effective. Hence, dengue is becoming a major global public health problem.

Dengue virus is transmitted by female *Aedes* mosquitoes. They lay more than 100 eggs at a time, therefore, they need nutrient-rich meals (i.e. blood) to acquire sufficient nutrients to lay that many eggs. When a female *Aedes* mosquito feeds on a dengue patient, the dengue virus enters into the mosquito with blood-meal and multiplies within the mosquito without making the mosquito sick. Then the virus enters to the mosquito's salivary glands. When a dengue virus carrying *Aedes* mosquito bites a healthy individual, it can transfer the dengue virus into the human body vi a mosquito saliva.

The correlation between rainfall anddengue infection is well known, as rain creates and maintains breeding sites for mosquitoes. Temperature, Humidity and other meteorological parameters also influence dengue virus transmission by influencing the behavior of *Aedes* mosquito, and the life cycle of the virus within the mosquito. While human body temperature remains constant at 37°C, the body temperature of a mosquito fluctuates according to the ambient temperature.

In meteorology, the difference between the maximum and the minimum temperature of the day is known as the Diurnal Temperature Range or DTR. Recent studies have shown that not only the average temperature of a day, but DTR also influence the life cycle of the *Aedes* mosquito and the virus it carries within. Therefore, even if the daily mean temperature remains relatively constant, the fluctuation in DTR could influence the dengue virus transmission. This interesting fact is lesser-known even among researchers and doctors in most of the dengue-affected regions.

One study found that when the DTR fluctuates widely ((i.e. high daily temperature fluctuation), and if the daily mean temperature is more than18°C, *Aedes* mosquitoes have a shorter lifespan, and their susceptibility for being infected with the virus, when feeding on blood containing dengue viruses, get reduced. Another laboratory study revealed that wider DTRs could prolong the part of the *Aedes* life cycle spent in water, increased mortality of mosquito larvae and reduced adult female reproductive capacity. Contrarily, a narrow DTR (i.e. low daily temperature fluctuation) could slightly increase the reproduction capacity of the *Aedes* mosquito. According to another study, wide fluctuations of DTR around a mean temperature of 26°C could impede dengue viruses in blood meal crossing the mid-gut wall of the mosquito, which in turn, may prolong the time taken by viruses to appear in the mosquito salivary glands. These results highlight that a wide daily temperature fluctuation (i.e. wider DTR) at relatively high mean temperature increases the mortality of *Aedes* mosquitoe larvae reducing the number of mosquitoes to infect people. In addition, with a wider DTR, virus-carrying infectious mosquitoes are more likely to die before having a chance to infect a person. This implies that wider DTRs are unfavorable for dengue virus transmission.

Currently, the risk of dengue infection exists in 129 countries. Nevertheless, the applicability of above mentioned laboratory findings to the real world were studied only in four locations, including Mae Sot-Thailand, Dhaka-Bangladesh and Kandy city and Colombo district in Sri Lanka.

Figure1 depicts the correlation between weekly dengue incidence in Kandy city and temperature parameters. The figure was extracted from an open access article published by the author and other co-authors (http://dx.doi.org/10.3402/gha.v8.29359).

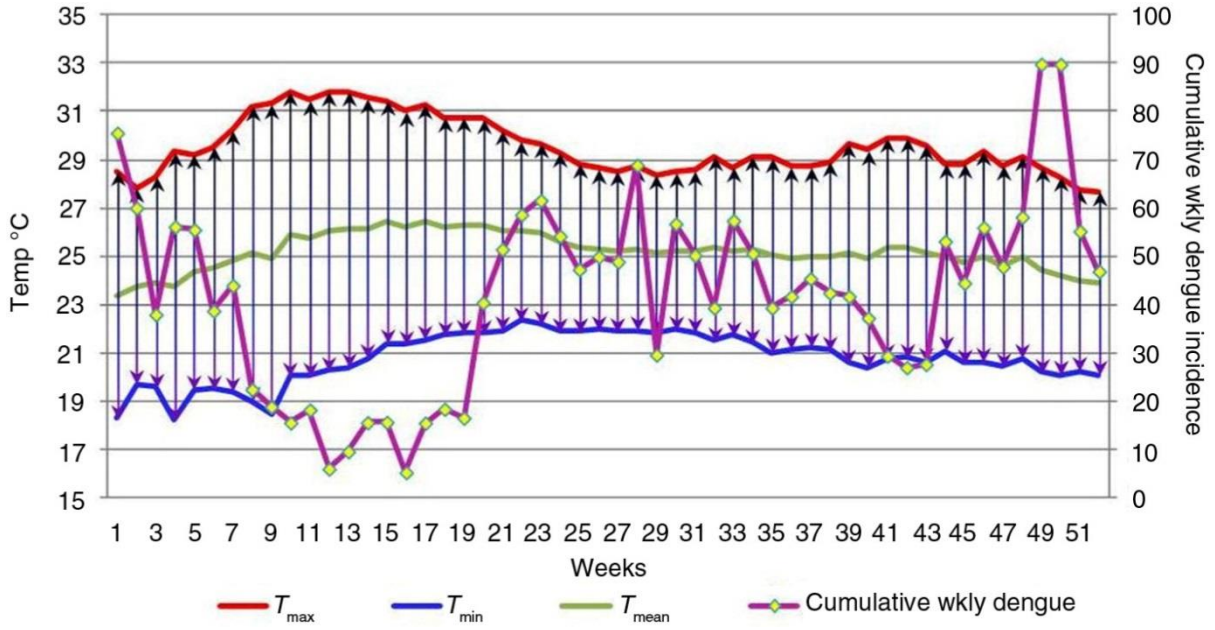


Figure1: Changes in weekly minimum (Tmin), maximum (Tmax), and mean (Tmean) temperatures and cumulative weekly dengue incidence over the course of all 52 weeks of the year, for 2003 - 2012. x-Axis: weeks; primary y-axis: temperature in degrees Celsius; secondary y-axis: cumulative weekly dengue incidence.

As depicted in Figure1, other than drop in December (week 49-52) to mid-February (week 1-6) and rise in March-April (week 9-16), the mean temperature in Kandy remains generally constant around 25°C. A wide DTR starting from late January until April is followed by a notable decline of dengue infections. Again an increase in DTR in September, but in comparatively less magnitude, corresponds to a decline in dengue infections. Narrow DTR during mid-year is associated with a rise of dengue infections. The readers may wonder how to explain the rise of dengue infections in November – January period. We shall not forget that several other meteorological parameters and non- meteorological parameters could also influence dengue occurrences. Second inter-monsoon and North East monsoon result the highest rainfall in Kandy, and create conditions favorable for *Aedes* mosquito breeding and dengue transmission. That explains the rise of dengue infections in November –January period in Kandy. Every day of a week does not have the same DTR. This study showed that dengue fever infections decline with number of days with DTR more than10°C per week increases whereas dengue infections increases with number of days with DTR less than10°C per week increases. The same authors published another study for the Colombo district covering data between 2005 – 2014. This study showed that dengue occurrence rises after a lag period when the number of days with DTR less than 7.5 °C per week increases and falls when the number of days with DTR more than 7.5 °C per week increases.

Global warming generally tends to reduce DTR while increasing the average daily temperatures. While reduction of DTR supports dengue transmission, as discussed above, rise of temperature in many regions, including temperate climates could create conditions more suitable for *Aedes* mosquito breeding. Evidences also suggest that rise of daily temperature could increase the biting frequency of *Aedes mosquitos*. In addition to increased risk of dengue infections in tropical regions, new incidences of locally transmitted dengue have been reported in Southern parts of the USA, France, Portugal, Croatia and Northern Australia in the last decade.

At present, the mainstay method of dengue control in many dengue affected regions is location-specific and mostly related to the destruction of Aedes mosquito breeding sites, especially during rainy seasons. However, increased temperature and reduced DTR may contribute to rising dengue infections. As discussed above, the rise in temperature increases the biting frequency of Aedes whereas reduction of DTR results in the increased number of Aedes mosquitoes carrying dengue

virus in their saliva. Thus promoting possible prevention methods of Aedes mosquito bites, such as the application of mosquito repellents, especially in mornings and evenings when the daily average temperature is high, and DTR is low may help to reduce dengue infections. In addition, biological control methods, such as infecting Aedes mosquitoes with Wolbachia bacteria to hinder the transmission of the dengue virus would be useful. However, it is important to continue the existing mosquito control mechanisms, while new methods can be integrated to control dengue fever outbreaks.

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Lab-grown mosquitoes infected with a bacterium "Wolbachia pipientis" released in the United States to combat mosquito-carried diseases

After a decade of fighting for regulatory approval and public acceptance, a biotechnology firm has been given the approval in May 2021 to release lab- grown mosquitoes infested with a bacterium Wolbachia pipientis that kill wild mosquitoes, into the environment in the United States. The lab-grown male mosquitoes are used as a tool to deliver the bacterium to wild mosquitoes that transmit viruses such as Zika, dengue and yellow fever.

(https://www.nature.com/articles/nature.2017.22959)

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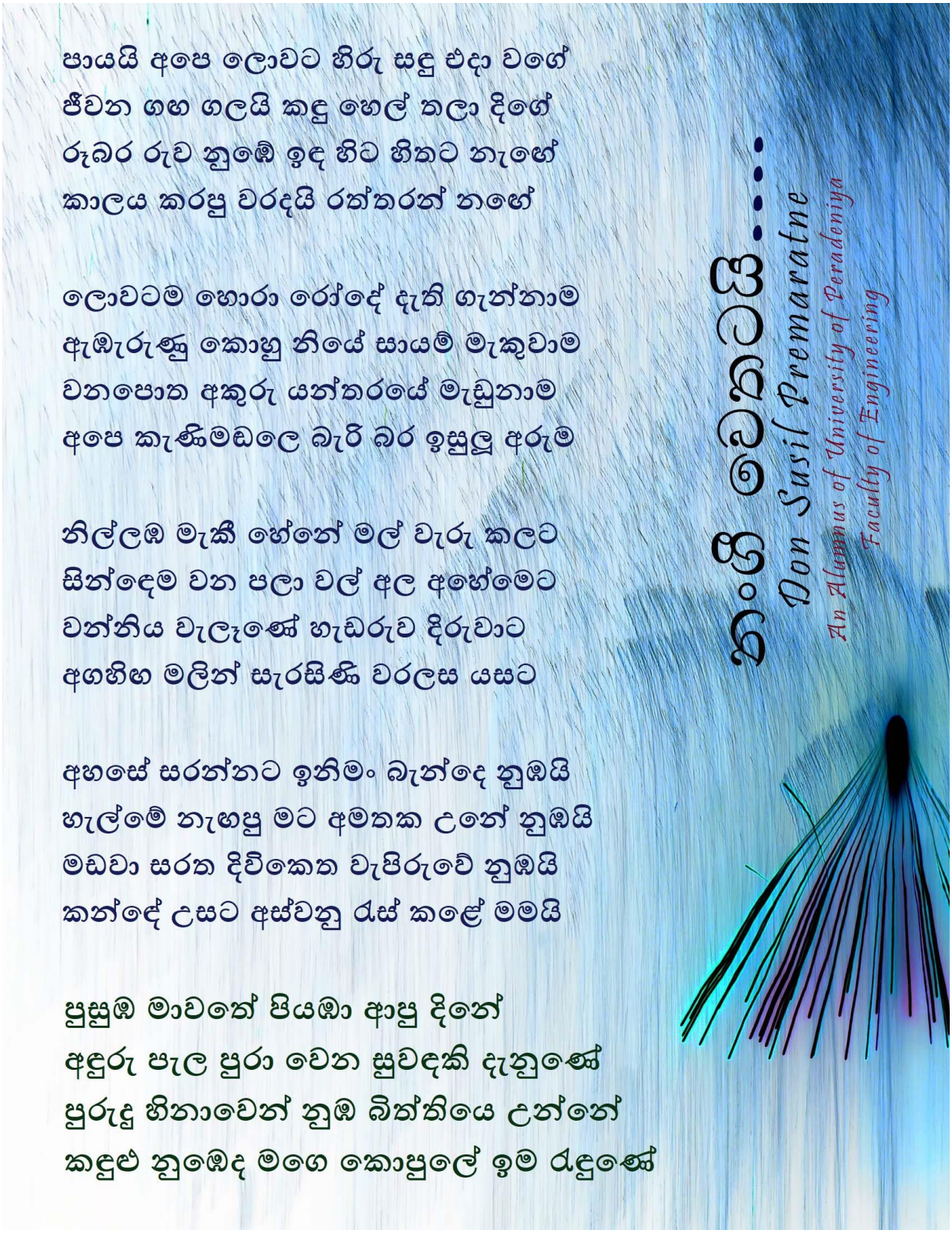
By Don Susil Premaratne, B.Sc. (Eng.)

(An Alumnus of the University of Peradeniya, Faculty of Engineering)



CANADIAN WILD BERRIES

Champa Wijekoon (PhD)

Research Scientist, Canadian Centre for Agri-Food Research, Winnipeg, Manitoba.

(An Alumna of the University of Peradeniya, of Faculty of Agriculture)

Canadian wild berries are widely distributed and mainly consumed by the indigenous community. These edible fruits are used later in the summer or fall when they become a little sweeter. The stronger taste of the berries make very nice preserves such as pies, jams, jellies and wine. Fruits such as berries provide significant health benefits because of their high antioxidant, vitamin, mineral, polyphenol and fiber content. Polyphenols including anthocyanin are the predominant bioactive phytochemical groups present in them. Research evidence supports that the wild berries have higher antioxidant capacity compared with cultivated berries.

Buffalo berries

source:flickr.com/photos/annkelliott/48407423087/

Although more than 200 species of small, fleshy, wild fruits called "berries" present in Canada, they are classified in different technical categories including epignyous fruits (e.g. blueberries, cranberries), pomes (e.g. Saskatoon berries), drupes (e.g. cherries, buffalo berries), true berries (e.g. elderberries, black current, gooseberries etc) and aggregate fruits (e.g. raspberries, blackberries, strawberries etc).

Wild Blueberries

Source:blog.withings.com/2019/07/31/do-wild-blueberries-live-up-to-the-health-hype/

Canada is the world's largest producer and exporter of wild blueberries (*Vaccinium angustifolium*) with great taste and high quality. Canadian wild blueberry exports are worth an estimated $239 million reaching over 30 countries in 2018. Lowbush wild blueberries are native to Alberta but grow naturally in all provinces. These plants are extremely hardy and produce small fruits that are rich in flavor. Recent studies showed that wild blueberries have high potential value compared to cultivated blueberries because of their high anthocyanin content.

Highbush cranberry (*Viburnum opulus var. americanum*) is another epignyous type fruit native to Alberta and produces an edible fruit in clusters. These plants can be used as a hedge plant and will tolerate shade. The highbush cranberry is actually not a cranberry however the term is given because of its fruits strongly resemble cranberries in both appearance and taste.

Highbush Cranberries

Source: ttseeds.com/product/highbush-cranberry/

Saskatoon berries (*Almelanchier alnifolia*) are a staple of indigenous and prairie settlers for generations. They are very hardy and function effectively as a natural fence, hedge or screen. These pome type berries ripen in late June or early July and are available throughout the year when frozen. They grow in many environments from western Ontario to British Columbia and the Yukon, from sea level to mountain peaks. Saskatoon Berries are commercially produced in North America but mostly confined to Canada. The Saskatoon Berry industry has grown to be one of the largest commercial fruit crop industries in the Canadian Prairies. These berries have higher anthocyanin content compared to other Prairie berries. The demand for these berries exceeds the supply.

Saskatoon Berries

Source:https://www.alamy.com/stock-photo/saskatoon-berry-tree.html

Wild cherries (*Prunus spp*) are popular drupes distributed in Canada. For example, chokecherries (*Prunus virginiana*) are shrubs or small trees, and grow across southern Canada. The fruits, ranging from red to black, grow in long beautiful clusters and are sweet in taste when fully ripened. Buffaloberry is another native drupe type berry used by indigenous people to flavor buffalo meat. Canadian buffaloberry (*Sheperdia Canadensis*) and Silver Buffaloberry (*S. argentia*) are the main 2 types present in the Prairies. Russet buffaloberry or soapberry (S. *canadensis*) are deciduous shrubs with small, reddish orange fruits grow from coast to coast. Bitter fruits of soapberries are good in jelly while indigenous people in British Columbia whip them with water to make a confection.

Chokecherries

Source:scienceviews.com/plants/chokecherry.html

Elderberries (*Sambucus spp*) are true berries and are considered medicinal plants with more vitamin C content than oranges. The elderberry tree can grow as tall as 20 feet. They traditionally have a sharp flavor but sweet varieties have been developed that are also available. It often grows in a shrub-like cluster of stems however some varieties are smaller and single-stemmed. Native edible wild black currant (*Ribes americanum*) and wild red Currant (*R. triste*) are attractive true berries and often produce aromatic shrub with nice fall color. About 14 species of currants are found in Canada. *Ribes oxycanthoides* is the wild Canadian gooseberry that is found in the urban landscape. Gooseberries grow almost everywhere in Canada except the far North. Reddish to dark purple colored, these true berries are tart and are best in jellies and preserves.

There are three species of strawberries (genus Fragaria, family Rosaceae), categorized as aggregate berry type, native to Canada. They grow in woodlands, meadows, clearings and coastlines. Blackberries (*Rubus spp*), in the Rosaceae family is another type of aggregate berry. More than 12 species of blackberries grow mainly in eastern provinces and southern British Columbia. Arctic raspberry, (*Rubus articus* ssp. acaulis) is a sprawling, creeping native aggregate berry that also works as an excellent ground cover.

Elderberries

Source:wikipedia.org/wiki/Sambucus

Recent studies show a link between the consumption of fruits rich in polyphenolic compounds and reduced incidence of chronic and degenerative diseases, such as cardiovascular disease, cancer and neurological disease. Therefore, more studies are necessary and may support the use of Canadian wild berries as a good source of antioxidant bioactive compounds to provide health benefits to Canadians.

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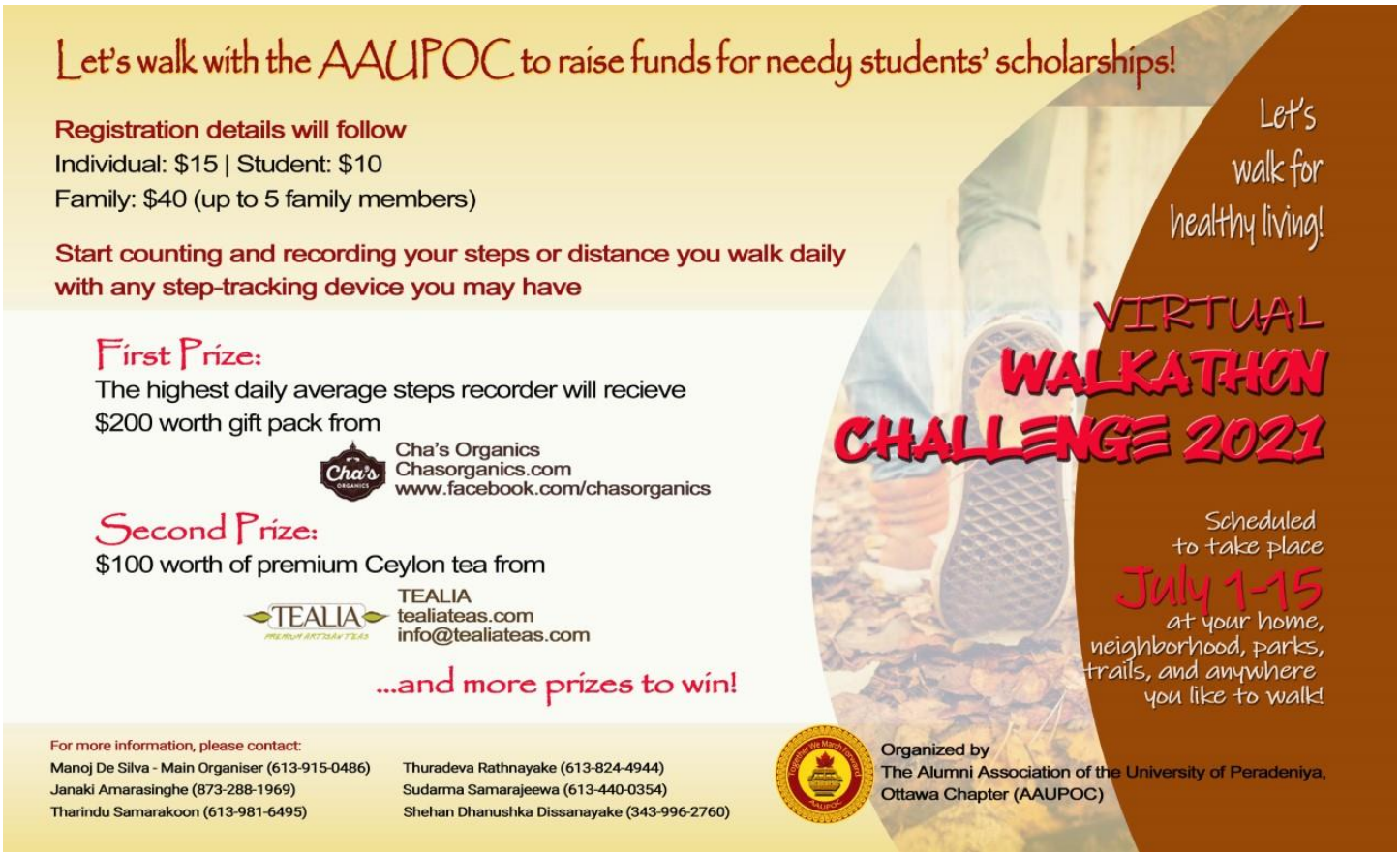
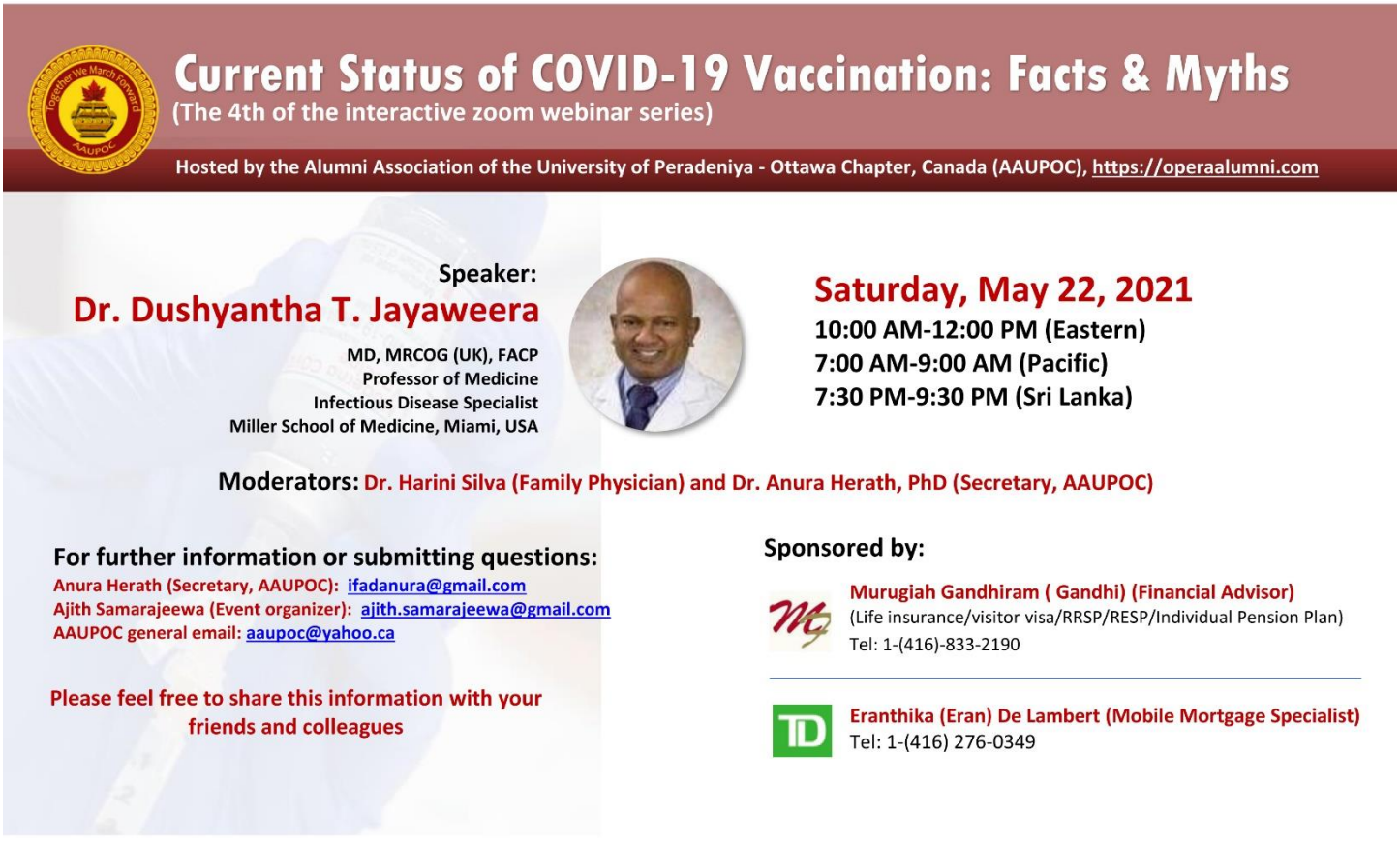
The world's oldest known wild bird, Wisdom, had another chick at age 70

Regarded as "oldest known wild bird in history", Wisdom has outlived previous mating partners as well as the biologist Chandler Robbins, who first banded her in 1956. Wisdom's long-term mate, Akeakamai, who she has been with since 2010 according to the United States Fish & Wildlife Service (USFWS), fathered the chick. USFWS estimated Wisdom has hatched more than 30 chicks over the course of her lifetime. Because she only nests every two years, the international bird community looks forward to see if she's been able to come back and nest.

(Source: BBC News. https://www.bbc.com/news/world-us-canada-56281983)

RECENTLY CONCLUDED AAUPOC EVENTS





AAUPOC WELCOMES NEW MEMBERS

Hasindu Gajanayake

Hasindu received his Bachelor's of Science degree from the Faculty of Engineering, University of Peradeniya in 2019. After graduation, Hasindu has worked as a software engineer in Sri Lanka. In Canada, he has enrolled for a postgraduate degree in cloud computing at the Loyalist College in Toronto. He now lives in Ottawa, and does his studies remotely. Hasindu likes to do cycling and swimming. We warmly welcome Hasindu to the AAUPOC.

Photo Credit – Deepani Waidyaratne

"SUMMER HAS FILLED HER VEINS WITH LIGHT AND HER HEART IS WASHED WITH NOON." – C.DAY LEWIS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NOTE FROM THE EDITOR

It is with great pleasure that we present the first edition of the AAUPOC Newsletter of the year 2021.

First of all, please let me thank all authors who contributed to this edition of the Newsletter. I am very delighted and highly appreciative of the enthusiasm shown by the authors in submitting their articles for the Newsletter.

Big thanks go to our sponsors for keeping the faith in our Newsletter for advertising their businesses. On behalf of the AAUPOC, I highly appreciate their contribution.

I would like to extend my sincere thanks to all article reviewers for their commitment to critically review the articles. The designer of the Newsletter, Deepani Waidyaratne deserves a big thank for her creative design.

Your suggestions are important in improving the quality of the Newsletter. Please send your comments and suggestions to aaupoc@yahoo.ca.

Please also note that you can read the previous editions of the newsletter through our weblink (https://operaalumni.com/newsletters.html).

Stay Safe and Healthy in this Pandemic...

Ajith Samarajeewa

~ No Entertainment is so cheap as reading,
nor any pleasure so lasting ~
-Mary Wortley Montagu -