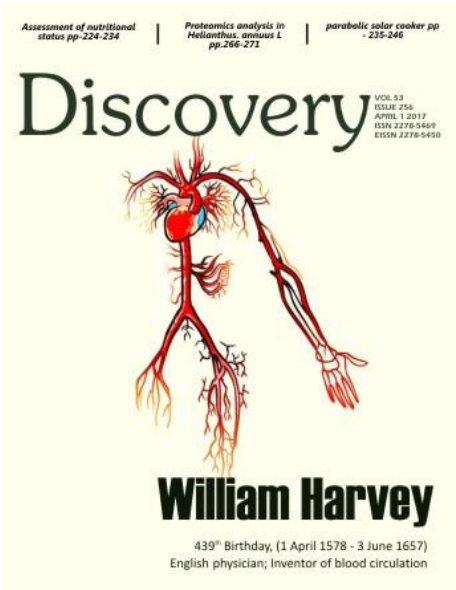
Volume 53, Number 256, Pages 224-285 1 April, 2017

Discovery

About the Cover



CELEBRITY OF THE MONTH

William Harvey
439th Birthday, (1 April 1578 – 3 June 1657)
English physician; Inventor of blood circulation

Harvey was an English physician who was the first to describe accurately how blood was pumped around the body by the heart. He was born in Folkestone, Kent on 1 April 1578. He made the momentous medical discovery that the flow of blood must be continuous and that its flow must be in one direction only. This discovery sealed his place in the history of medicine. He learned about the human body by dissection and anatomical observation. He focused much of his research on the mechanics of blood flow in the human body. Most physicians of the time felt that the lungs were responsible for moving the blood around throughout the body. Harvey questioned these beliefs and his questions directed his life-long scientific investigations. His Direct observation of the heartbeat of living animals showed that the ventricles contracted together, dispelling Galen's theory that blood was forced from one ventricle to the other. Dissection of the septum of the heart showed that it contained arteries and veins, not perforations. When Harvey removed the beating heart from a living animal, it continued to beat, thus acting as a pump, not a sucking organ. Harvey also used mathematical data to prove that the blood was not being consumed. Removal of the blood from human cadavers showed that the heart could hold roughly two ounces of blood. By calculating the number of heartbeats in a day and multiplying this by two ounces, he showed that the amount of blood pump far exceeded the amount that the body could possibly make. He based this figure on how much food and liquids a person could consume. His work is considered to be one of the most important contributions in the history of medicine. Without the understanding of the circulatory system made possible by Harvey's pioneering work, the medical miracles that we think are common place would be impossible. He presented this explanation in 1628 in his publication -An Anatomical Study of the Motion of the Heart and of the Blood in Animals. He published another ground-breaking book in 1651 titled as “Essays on the Generation of Animals.” This book is considered the basis for modern embryology. This great physician died of a stroke at the age of 79, on 3 June, 1657 at Roehampton. He is buried in Hempstead church.

RESEARCH

Assessment of nutritional status, dietary patterns and knowledge perceptions of adolescent girls in Jessore, Bangladesh

Md. Ashrafuzzaman Zahid, Safia Tasnim, Rashida Parvin, Dipak Kumar Paul, Suvasish Das Shuvo

The study was conducted to assess the nutritional status of urban adolescent girls aged (10 to 11 years) in Jessore district of Bangladesh. Adolescent is an important period physical physiological and psychological development from puberty to adulthood. There is lack of information related to the current nutritional status of urban adolescent girls in Jessore district of Bangladesh. A total of 200 students were selected by using random sampling process from six different urban schools from Jessore. In the study sample about 46% were 10 years old and 54% were 11 years old adolescent girls. About 13% girls were found underweight and same percentage of girls was found overweight. About 94% girls maintained hygienic practice. About 27% girls reached puberty, 49% girls knew the basic knowledge about nutrition. Only 26.5% girls consumed fruits, animal protein and milk and dairy products with cereals and vegetables. From this study we can point out that, most of the girls were normal percentage of underweight and overweight girls was below the national level. Both underweight and overweight were equally prevalent among the girls. To achieve wholesome adolescent health, we need to have more effort covering all the adolescent health problems. Thus the study concluded that government and non-government intervention program should be given emphasis for the health of adolescent girls.

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ANALYSIS

An experimental analysis on cooking performance of parabolic solar cooker in Kathmandu valley

Laxmi Bhurtel, Daya Nidhi Chhatkuli, Binod Adhikari

In the present context, the world's population is increasing day by day. Due to rapid increment in population, demand for energy is increasing. The challenge towards fuel crisis is also increasing. The habitual use on energy consumption will not be comprised even if all the fossil fuel gets exhausted. After fossil fuels, people will obviously move in forest resources for the supplement of energy needs. So its necessity to find an alternative energy resource that can be replenished constantly and forest resources can be conserved making environment clean and healthy. Now it's high time for us to focus on promotion of the alternative source of energy. Among renewable energy sources sun's energy comes in first choice. The sun's energy is really powerful. Solar energy is renewable and it's free of cost. In the context of our country Nepal, where majority of population are dependent on firewood, biomass, cow-dung for cooking purposes, solar cooking can be better choice for reducing such energy resources. The study focuses on the usage of solar energy. The study on experimental analysis on cooking performance of Parabolic Solar cooker in Kathmandu valley was carried out to identify the cooking performance using anodized pressure cooker and time at which cooking time can be fast. From the result, it was found that cooking could be efficient in daytime so it could be used in hotels in Himalayan region, trekking zone where firewood is not much available. And cooking process in parabolic solar cooker was not so slow that it couldn't be used. The taste of food was relatively better than that of cooked in firewood and liquefied petroleum gas as food retains tenderness in it.

Discovery, 2017, 53(256), 235-242

A Preliminary Taxonomic Account of the Family Caesalpiniaceae of Rajshahi

Mahbubur Rahman AHM, Barman AK

The present research paper focused on the family Caesalpiniaceae of Rajshahi was carried out. A total of 19 species under 9 genera belonging to the family Caesalpiniaceae were collected and identified. Out of the total number of species, *Bauhinia acuminata* L., *Caesalpinia pulcherrima* (L.) Swartz., *Cassia fistula* L., *Delonix regia* Raf., *Tamarindus indica* L., *Senna sophera* (L.) Roxb., *Senna tora* (L.) Roxb., *Saraca indica* L., *Peltophorum pterocarpum* (DC.) K. Heyne. were dominant, *Cassia grandis* L., *Senna occidentalis* Roxb., *Senna siamea* (Lamk.) Irwin & Bar., *Senna alata* (L.) Roxb. were frequent and *Bauhinia purpurea* L., *Bauhinia variegata* L., *Brownea coccinea* Jacq., *Caesalpinia bonduc* (L.) Roxb., *Cassia javanica* L., *Cassia renigera* Wall ex Benth. were rare species in the study area. For each species, the nomenclature has been brought updated and the synonyms, local name, English name, flowering time, chromosome number, taxonomic description, native and medicinal uses have been provided.

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Numerical solution of the problem on the impact plane non-stationary elastic waves by a cylindrical body

Safarov Ismail Ibrahimovich, Teshaev Mukhsin Khudoyberdiyevich, Akhmedov Maqsud Sharipovich, Rajabov Ozod Isroilovich

In this paper the impact of the non-stationary waves on the cylindrical body with a circular or rectangular cross-sections is discussed. The problem is solved in the flat setting. The numerical method when the impact load in the form of a unit function of Hevisayd. Obtained Numerical results.

Discovery, 2017, 53(256), 255-265

Proteomics analysis between cytoplasmic male sterility and restorer lines in Sunflower (Helianthus. annuus L)

Shabani Alireza

In order to comparison between two cytoplasmic male sterile and fertile lines in sunflower *(Helianthus. annuus)*, a reference map of the major soluble proteins of sunflower seed was established using a combination of 2-DE and MALDI TOF and a total of 215 protein spots were detected with silver staining in a pH ranges of 3–10, of which 152 proteins were identified. These identified proteins were grouped into diverse functional categories. To further get an insight into the molecular basis of sunflower heterosis, differential proteome analysis between hybrid and parents were performed. A total of 7 differentially expressed protein spots were detected, and both quantitative and qualitative differences could be observed. Moreover 7 differentially expressed protein spots which identified were involved in metabolism, signal transduction, energy, cell growth and division, disease and defense, secondary metabolism. These results indicated that hybridization between two parental lines can cause expression differences between sunflower hybrid and its parents not only at mRNA levels but also at protein abundances.

Discovery, 2017, 53(256), 266-271

COMMUNICATION

Green chemistry: attempts to save our environment

Nirakar Sapkota, Ram Darash Pandey

Realizing the need for protection of the environment, scientists introduced Green Chemistry as a new branch of Chemistry. It aims to minimize the production of hazardous wastes, reduce the cost of chemicals, protect the environment and the humans from various types of chemical-induced risks, and to monitor the environment-conservation mechanisms. This review article aims to discuss about how the principles of Green Chemistry help in reduction of risks due to chemicals, terrorism control, sustainable development by proper utilization of resources and creation of a better world overall. Attempts have been made to include some efforts made internationally to promote this branch of Chemistry, inspire the researches and students to dedicate themselves in the field and motivate the industries to practise Green Processes for sustainable development.

Discovery, 2017, 53(256), 272-278

PERSPECTIVE

Saving blue gold – methods and solutions

Abhilaksh Grover, Adwiteya Grover, Alka Sharma Grover

Water is the most essential element for living beings on the blue planet. The world would shrink to nothing without enough water for drinking, cooking, sanitation and industrial use. As the world is advancing industrially as well as commercially, water is becoming contaminated and scarce. Need of the hour is to preserve this valuable "blue gold" and consume it judiciously. Chandigarh also known as city beautiful situated on the foothills of the magnificent Himalayas in the north western part of India is no exception as far as the problem of water scarcity is concerned. Water auditing is a mechanism for conservation of water which will grow significantly as the demand for water increases[1]. Water audit is also an accounting tool which determines unaccounted amount of water (UAW) in any water distribution system[2] . An onsite survey and assessment of water wastage was undertaken through a water audit of fixtures, equipments and water management strategies at various schools, colleges, hospitals, shopping malls, open markets, houses, parks and gardens, lakes, worship places and roads of the city. The longstanding leaks, faulty fixtures and water wastage points were identified. To reduce wastage of water important recommendations were made[3] .Lesser the use of water, lesser the utility cost. Reducing the use of water is always a profitable proposition, identifying and correcting long standing leaks will help to win half the battle of water conservation. An awareness campaign was also undertaken through human interaction during water auditing process. The findings reveal that public sector buildings such as hospitals, parks, households, educational buildings. Had leakages and a malfunctioning water system whereas their private sector counterparts had minimum or no complaints. Accountability seems to be an answer to the existing problem of wastage of blue gold and a part of strategy to save it.

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