SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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WHAT'S NEW IN SCIENCE

Mice having heavy coffee dose produce fewer fat cells, bringing major health benefits

Coffee contains active compounds that can suppress obesity and its related health effects. New research shows that a morning brew might have broader benefits than just an energizing jolt. Previous health surveys have hinted that regular coffee drinkers have a significantly reduced chance of developing obesity and associated diseases such as type-2 diabetes and heart disease. Researchers at Keio University have taken a closer look at these claims, and discovered a molecular mechanism by which coffee inhibits fat cell formation.

"Our results provided evidence that drinking coffee has advantages for reducing obesity and its associated diseases," says Megumi Funakoshi-Tago from the Keio University Faculty of Pharmacy, who led the work. The team's first step was a controlled experiment with mice. In a study involving 36 animals, just as earlier surveys had predicted, mice on a high-fat diet gained significantly less weight when given a diluted drip-filter coffee extract, the team discovered.

These lean, coffee-fed mice had accumulated less of a fat form called adipose tissue, the very tissue associated with obesity. "It is well understood that obesity is caused by abnormal 'adipogenesis'," the process by which immature fat cells become fully functional, fat-laden cells called adipocytes, Funakoshi-Tago says. Drilling down into the cellular signaling pathway known to trigger adipogenesis, the researchers traced coffee's effect to a molecule called insulin receptor substrate 1 (IRS1). In the presence of coffee, a key phosphorus tag on IRS1 is removed, consigning the molecule to the cellular recycling bin and switching off adipocyte formation. But to realize the full effects of drinking coffee on obesity would demand a serious coffee habit, says Funakoshi-Tago. Weight gain was restricted in mice by giving the equivalent of 6 to 7 cups of coffee per day. "To prevent obesity, we would have to drink more than 9 cups a day," she adds. A more efficient route, would be to identify the coffee molecule responsible for the beneficial effect, which could be a lengthy task. "Coffee extract contains a large number of chemical components," Funakoshi-Tago says. "We tested the effects of caffeine, chlorogenic acid, and caffeic acid, which are known to be abundant in coffee extract, however, they had no effect on adipogenesis." The team is now grinding through coffee's other component molecules, looking for the elusive active compound.

Courtesy : The Joyous English Medium School

SCIENTIST OF THE MONTH

Govindjee

Govindjee was born on October 24, in 1932 at Allahabad in Uttar Pradesh. He did his B. Sc, M. Sc. from the University of Allahabad. He did his Ph.D. from U.S.A. He is credited with the research into the process of photosynthesis in plants to a large extent which evolve oxygen. Govindjee's conviction was that if human beings could comprehend the process of photosynthesis completely, it would be easier to increase food production. And in that case, the problem of hunger would surely disappear from the face of the earth. He had taught both undergraduate and the graduate level students. He was appointed as a Professor of Biophysics and Botany at University of Illinois in U.S.A. His Lectures were mainly pertaining to biophysics, photosynthesis etc. He is considered one of the outstanding teachers by his students. He had served in the Editorial Board of Dept. of Biotechnology, New Delhi, India.

Courtesy : The Joyous English Medium School

SCIENCE FACTS OCTOBER 2017

Breast Cancer Awareness Month

3rd Oct	World Habitat day (1st Monday of October) (by U.N.)
3rd Oct 1803	Johan Gorrie (Inventor of a Cold Air Process of Refrigeration) was born on this day.
4th Oct 1832	William Griggs (Inventor of Photo Chromo Lithography) was born on this day.
4th Oct 1957	Soviet Union launched first artificial Earth Satellite named "Sputnik-1"
4th Oct	World Space Week (by U.N.)
5 th Oct	World Teachers Day. (by UNESCO)
5 th Oct 1864	Louis Lumiere (Inventor of first Motion Picture Camera) was born on this day.
6 th Oct 1893	Maghnad Saha (Great Indian Astrophysicist) was born on this day.
8th Oct 1917	Rodney Rabert Porter (Discoverer of exact Chemical Structure of an Antibody) was born on this day.
10th Oct 1731	Henry Cavendish (Discoverer of Hydrogen gas) was born on this day.
11th Oct	International Day of the Girl Child (by U.N.)
12th Oct 1860	Elmer Sperry (Inventor of the Gyro Scope) was born on this day.
16th Oct	World Food Day (by U.N.)
19th Oct 1783	The first manned balloon flight done by Scientist Jean Francois Pilatre de Rozier.
19th Oct 1910	Subrahmanyan Chandrasekhar (Nobel Prize winner Astrophysicist of India) was born on this day.
20th Oct 1891	James Chadwick (Discoverer of Neutron) was born on this day.
21th Oct 1833	Alfred Nobel (Inventor of Detonator for Dynamite & Nitro-Glycerine) was born on this day.
22th Oct 1896	Charles Glen King (Discoverer of Vitamin C) was born on this day.
22th Oct 1905	Karl Jansky (Discoverer of Cosmic Radio Wave Emission) was born on this day.
27th Oct 1811	Issac Singer (Inventor of Home Sewing Machine) was born on this day.
28th Oct 1914	Jonas Salk (Inventor of Polio Vaccine) was born on this day.
29th Oct 1656	Edmond Halley (Discoverer of Halley's Comet) was born on this day

U. N. : United Nations

UNESCO United Nations Educational Scientific & Cultural Organization

ANS:- 1) B 2) A 3) B 4) B 5) B

Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday & Public Holidays
11.00 am to 6.30 pm

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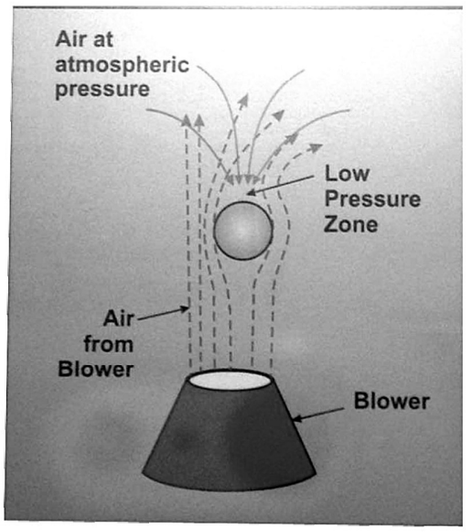
KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

Bernoulli's Ball

Press the switch to allow air to blow. Thought the hole in the vertical direction. Observe that the ball immediately rises up and remains afloat. Air rushing upward through the small hole pushes the ball upwards. It also adheres to the sides by the ball due to Coanda effect. Air molecules curving around the ball travels a little longer path to get past it than those which move straight in the air straight in the air steam but they do so in the same time. According to Bernoulli's principle increased speed of the air molecules adjacent to the ball creates a region of low pressure around the ball. Surrounding air at higher pressure holds the ball in place.



SCIENTIFIC QUESTION

Why is Carbon Dioxide used in fire extinguishers?

Carbon Dioxide, or known by its chemical shorthand Co_2, is a naturally occurring gas that's present in the air we breathe. This gas is essential to life on Earth : It's a vital component of both photosynthesis and cellular respiration.

Properties :-

Co_2 is a colorless and in normal concentration, odorless gas. It doesn't react with burning material, so It doesn't create any toxic or other by products. When used to suppress a fire. Carbon dioxide doesn't conduct electricity, making it an ideal fire suppressant for use in computer rooms, electrical distribution stations and other locations where a large amount of electricity may be present.

Co_2 acts on fires in two ways :

(1) The release of the gas under pressure has a cooling effect, as can be seen by the resulting mist cloud and ice-particles.

(2) The gas also displaces the oxygen that's necessary to maintain combustion.

Carbon dioxide molecules are heavier than oxygen molecules. When the liquid carbon dioxide inside the Extinguisher expands into a gas, the carbon dioxide pushes out any oxygen surrounding the fire. With out oxygen available to fuel the chemical reaction, the fire goes out quickly.

Why we use Co_2 and not other chemical?

Co_2 is used because it can be kept as a liquid agent at a room temperatures in a high pressure container. At 70 degrees, the pressure will be about 750 psi (nearly stable). If we use liquid nitrogen or argon the pressure, would be immense and couldn't safely be kept in a portable container.

Courtesy : The Joyous English Medium School

SCIENCE QUIZ

1. 1 Centimeter equal to _____ Nenometer.

A) 10^{9} B) 10^{7} C) 10^{-9} D) 10^{-7}.

2. What is the dimension of E-Coil Bacteria?

A) 2000nm B) 5000nm C) 7500nm D) 9000nm.

3. Which is not a Biopolymer?

A) Polysaccharide B) Polythene C) Protein D) Nucleic acid.

4. Which gas has Brown colour?

A) Nitric acid B) Nitrogen dioxide C) Nitrous oxide D) Sulfur dioxide.

5. Which metal can be cut using knife?

A) Silicon B) Sodium C) Copper D) Lead

'GANESHJI EXHIBITION'

In celebration of Ganesh Chaturthi, an exhibition of Ganesh idols in various forms made from various material along with paintings and photographs was held at Science Centre. This exhibition consists of story on birth of Ganesha, its religious importance, information on Ganesh festival in Gujarat and other places, various forms of Ganesha and importance of Ganesha visarjana. Along with idols from collection of Architect Shri Sanjaybhai Joshi and from Saradar Vallabhbhai Patel Museum's collection made from Marble, Copper, Brass, Stone, Fibre, Clay, Silver, Wood, Glass, Shell, Conch, Crystal etc. This exhibition was opened for public from 24th August to 10th September, 2017 at Science Centre.

Science Project

Surat Municipal Corporation in collaboration with Surat Smart City Development Ltd. had organized "Science Fair"at ground floor of Art Gallery, Science Centre, Surat from 21st to 22nd July 2017. 'Shri Kanchanlal Mamawala Primary School No-88' presented their project on 'Water Priceless Gift'. We know that our earth cover approximately 71% of the water. In which Oceans cover approximately 96.5% area of the earth and River, Icebergs, Ponds, Moist in Soil etc. had water part, in which only 2.5% is fresh water. The life does not exist without water so in this modern era the amount of pollution is increased. Human invented techniques like the RO plant to save our selves from water pollution every technology has benefits and drawbacks both. Full form of RO is Reverse Osmosis which is the technique for water purification which remove the ions, molecule and other impurities in drinking water. In 1950 the University of California, Los Angeles first used the half transparent barrier and investigate sea water but in the beginning of 1970 it uses in medicine, industrial and local programmers to purify the water. Water is being wasted almost 75% in RO technique and this wasted by product water from RO is used in other day to day routine life.