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DEPARTMENT OF BOTANY
PRESENTS

GULMOHAR

GULMOHAR NEWSLETTER

FROM THE EDITOR'S DESK

by Shubham Patkar
TY B.Sc

A warm welcome to our third edition of the year 2020-2021.In this edition we have tried to publish some interesting articles and photographs. Health has become a major concern in today's world. What type of food you eat really matters when it comes to body's health. In this edition we have included an article on benefits of flavonoid rich food. There are other articles like Mucormycosis (Black fungus), Fungal flower and Covid self testing kit. We also bring to you some fun facts.Last but not least don't forget to check out the photography section which show amazing photography skills of the students as well as teachers.

HAPPY READING!

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FLAVONOIDS

Flavonoids are a group of plant metabolites thought to provide health benefits through cell signaling pathways and antioxidant effects. These molecules are found in a variety of fruits and vegetables. Flavonoids are polyphenolic molecules containing 15 carbon atoms and are soluble in water. Flavonoids are the most important plant pigments for flower coloration,producing yellow or red/blue pigmentation in petals designed to attract pollinator animals. In higher plants, flavonoids are involved in UV filtration, symbiotic nitrogen fixation, and floral pigmentation.

Food sources

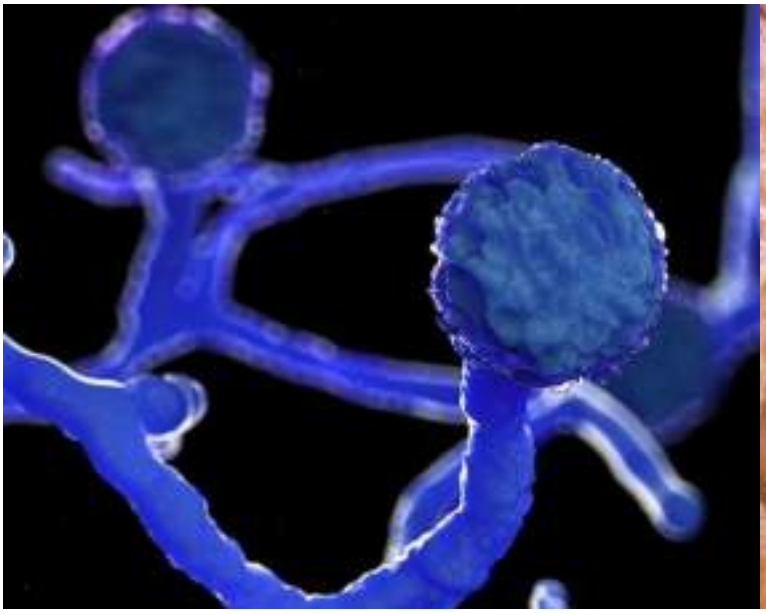
Flavonoid-rich foods, based on their surprising health effects are well described as superfoods. These include all plant origin foods mainly tea, fruit, vegetables, grains, legumes, nuts, and wine Tea and wine are the primary dietary sources of flavonoids in eastern and western societies, respectively. Besides, leafy vegetables, onions, apples, berries, cherries, soybeans, and citrus fruits are considered an important source of dietary flavonoids

What do flavonoids do?

- Flavonoids help regulate cellular activity and fight off free radicals that cause oxidative stress on your body. In simpler terms, they help your body function more efficiently while protecting it against everyday toxins and stressors.
- Flavonoids are also powerful antioxidant agents. Antioxidants help your body fight off potentially harmful molecules that can be introduced to the body. Your body produces antioxidants naturally, but they're also found in dark chocolate, legumes, and many fruits and vegetables.
- Inflammation is one of your body's immune responses. Allergens, germs, toxins, and other irritants can trigger inflammation that results in uncomfortable symptoms. Flavonoids may help your body dismiss that inflammatory reaction so that those symptoms are reduced.

Source: healthline.com

MUCORMYCOSIS



What is Mucormycosis?

Mucormycosis is a type of fungal infection. It is caused by a group of molds called mucormycetes. It's relatively rare, but also very serious.Formally known as zygomycosis, this infection tends to occur most often if you have weakened immunity from an illness or health condition.It's important to get treatment. If left untreated, mucormycosis can be fatal.

What are the symptoms of Mucormycosis?

Mucormycosis presents itself as either a respiratory or a skin infection. Signs of a related sinus or respiratory infection may include cough, fever, headache, nasal congestion, sinus pain.

With a skin infection, Mucormycosis can develop within any part of your body. It may initially occur at the site of skin trauma, but it can quickly spread to another area. Be on the lookout for symptoms such as blackened skin tissue, blisters, fever, redness, swelling,tenderness,ulcers.

What causes Mucormycosis?

Mucormycosis is caused by exposure to mucormyete molds. These organisms occur in leaves, piles of compost, soil and rotting wood.

You can contract mucormycosis by breathing in affected mold spores in the air. This is referred to as a sinus (pulmonary) exposure. In turn, you may develop the infection in your central nervous system (rarer), eyes, face, lungs, sinuses.The fungus can also infect your skin via a cut or burn (cutaneous exposure). In such cases, the wound or burn ends up becoming the area of infection.

How is Mucormycosis diagnosed?

People who have Mucormycosis often don't know they have it. You may get diagnosed with the condition upon going to the doctor for a lung, sinus, or skin infection. You should see your doctor for any type of suspected infection.

Mucormycosis is diagnosed by looking at a tissue sample in the lab. Your doctor may collect a sample of phlegm or nasal discharge if you have a suspected sinus infection. In the case of a skin infection, your doctor may also clean the wounded area infection.

Source: healthline.com

MUCORMYCOSIS

How is Mucormycosis treated?

The first steps in treating Mucormycosis are receiving Intravenous antifungal medications and having surgical debridement. Surgical debridement involves cutting away all infected tissue. Removing infected tissue has been shown to prevent the infection from spreading further.

If you respond well to Intravenous and tissue removal, your doctor will likely remove your Intravenous and give you oral medications to take.

Common antifungal medications that your doctor may prescribe for Mucormycosis include:

- Amphotericin B (Given Intravenously)
- Posaconazole (Given Intravenously or orally)
- Isavuconazole (Given Intravenously or orally)

What is the outlook for Mucormycosis?

Chances for Mucormycosis recovery depend greatly on early diagnosis and treatment. The infection has the potential to spread throughout the body. Death is a possibility with this type of severe infection.

However, Mucormycosis is relatively rare. To be on the safe side, you should always have your doctor evaluate any suspected form of infection to rule out such serious underlying causes.

Is it possible to prevent a Mucormycosis infection?

Mucormycosis isn't contagious, so you can't get it from an infected person. Self-care measures are the best way to prevent this type of infection. If you have a weakened immune system, it's important to keep yourself safe outdoors. Wearing a mask while doing yardwork and bandaging all wounds until they heal will help prevent fungal infections.

You may also consider taking extra precautions during the summer and autumn months, when there's an increased amount of the fungi in the environment.

FUNGAL FLOWER

Two orange-yellow “blooms” at right are fungal mimics of flowers produced by yellow-eyed grasses, such as the one at left. Credit: K. Wurdack Smithsonian Institution.

On a collection trip to Guyana in 2006, botanist Kenneth Wurdack was strolling along an airstrip at Kaieteur National Park when he noticed something unusual about the flowers on two species of yellow-eyed grasses. Unlike the species’ typical blooms, they were a more orange shade of yellow, tightly clustered and spongy in texture. “I just sort of filed it away as an incidental thing,” Wurdack says.

On subsequent trips, he observed more examples of the strange phenomenon. Digging through relevant botanical literature, Wurdack learned what was actually going on: The orange oddities were not really flowers at all. And the yellow-eyed grasses which belong to a genus called *Xyris* had not made them.
Instead they were mimics - the product of a fungus that Wurdack, who works at the Smithsonian National Museum of Natural History, and his colleagues recently described. The fungus, *Fusarium xyrophilum*, infects an *Xyris* plant and sterilizes it to block the plant’s own blooms. Then *F. xyrophilum* hijacks an as yet unknown aspect of the plant’s operations to host pseudoflowers made entirely of fungal tissue potentially tricking pollinators to disperse its spores rather than pollen from the plant’s flowers. The finding is thought to be a first of its kind on record.

Fascinated by this likely case of floral mimicry, scientists are now left wondering how this fungus evolved to deceive and to do it so well. “This is the only example that we know of, anywhere on planet Earth, where the false flower is all fungal,” says Kerry O’Donnell, a microbiologist at the U.S. Department of Agriculture’s Agricultural Research Service and a co-author of the recent study about the pseudoflowers, which was published in Fungal Genetics and Biology.

COVID 19 SELF TESTING KIT

The Indian Council of Medical Research (ICMR) on Wednesday **approved the country's first Covid-19 self-testing kit** for home use. That essentially means anyone can collect their own nasal sample and test it for SARS-CoV-2.

How does a self-test kit help?

Many states are going through a second wave of infections, putting pressure on diagnostics laboratories. The RT-PCR test, considered the gold standard for Covid-19 testing, takes 3-4 days to give results, delaying hospitalisation and treatment. Self-test kits can potentially be a game-changer in Covid-19 management in India. These can cut queues in laboratories, reduce costs, dissipate the burden on existing manpower for sample collection from homes, and provide quick results (within 15 minutes), leading to prompt treatment and isolation.

Such a self-test kit was first approved in the US last November. A rapid-result all-in-one test kit produced by Lucira Health was given emergency use authorisation. Similar kits have been approved in Europe and South Korea too.

How do I test myself?

The kit comes with a pre-filled extraction tube, sterile nasal swab, a testing card, and biohazard bag. First download the CoviSelf app and enter all your details. The app will capture data on a secure server connected with the ICMR portal, where all test reports are available to government.

Before taking the test, sanitise your hands and clean the surface on which the kit is to be placed. Insert the swab into your nose 2-4 cm inside, or until it touches the back of nasal tract, and rub it well to collect the specimen. The swab is then swirled inside the extraction tube to mix with the liquid inside, the tube is tightly closed, and two drops from the extraction tube's outlet are spilled onto the testing card.

COVID 19 SELF TESTING KIT

The result comes within 15 minutes. A person is positive for Covid-19 if two lines appear on the testing card on marker 't' for testing line, and 'c' for quality control line. If the person is negative, a single line appears on marker 'c'. If the result takes more than 20 minutes to show, or if a line does not flash across marker 'c', then the test is invalid.

Seal the tube and swab in the biohazard bag and dispose of it as biomedical waste.

Pros and cons:

A person testing himself at home rather than visiting a hospital or lab, or calling a technician at home, reduces the risk of transmission to others. Swab collection in this case is fairly simple and quick, and reduces overall testing expenditure and the stress of booking appointment in labs. Self-testing will reduce the burden on laboratories that are currently working 24 hours up to full capacity with manpower that is already saturated.

On the flip side, the reliability of results remains a major concern. The likelihood of the sample not being collected correctly, or the swab stick getting contaminated, is high.

Also, rapid antigen tests come with a high chance of false negatives. If a Covid-infected person is asymptomatic and tests negative, the test may give a false sense of security. But by far the biggest concern is the difficulty in tracing positive patients. A person can feed a wrong address and details on the mobile app, making it impossible for health workers to carry out contact tracing. Alternatively, technical errors in the mobile app can hamper the entire testing and reporting process.

While a rapid antigen test serves as a quick mass surveillance tool, over-dependence on it for testing is not advisable. It should only supplement, not form, the bulk of testing.

How effective is self-testing?

Self-tests can be effective if the patient follows isolation norms, feeds correct data and is able to interpret the results accurately.

FACT'O'MANIA

- Bamboo is the fastest growing woody plant in the world; it can grow 35 inches in a single day.
- Strawberry is the only fruit that bears its seeds on the outside. The average strawberry has 200 seeds.
- Banana is an Arabic word for fingers.
- Cricket bats are made of a tree called Willow and baseball bats are made out of the wood of the Hickory tree.
- The first potatoes were cultivated in Peru about 7,000 years ago!
- There is a plant in Australia known as the "Suicide Plant" because the effect of its sting can last for years, and its pain is so unbearable that people have killed themselves after
- Brazil is named after a tree!

PHOTO GALLERY (STUDENTS)

Mutingia calabura
Ankita Chauhan (FY B.Sc)

Spathiphyllum
Anjali Vijaykumar (FY B.Sc)

Heliconia psittacorum
Siddhesh Kolambkar (FY B.Sc)

Calandirina grandiflora
Asher Abraham (FY B.Sc)

Nerium oleander
Ritika Gupta (FY B.Sc)

Lantana camara
Trishik Jogi (SY B.Sc)

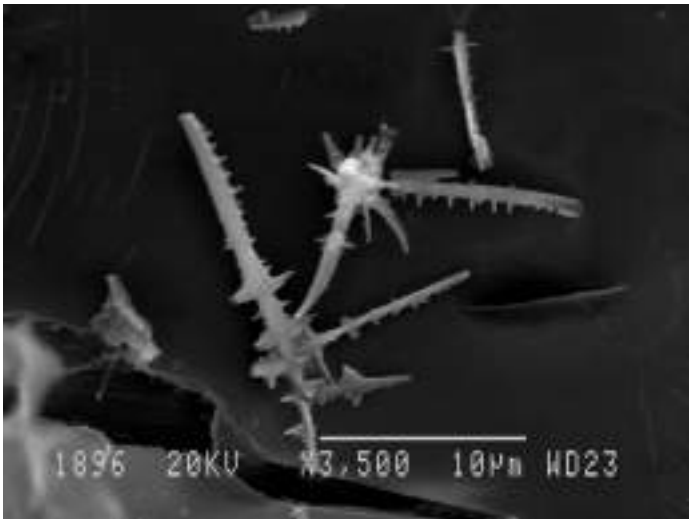
PHOTO GALLERY (TEACHERS)

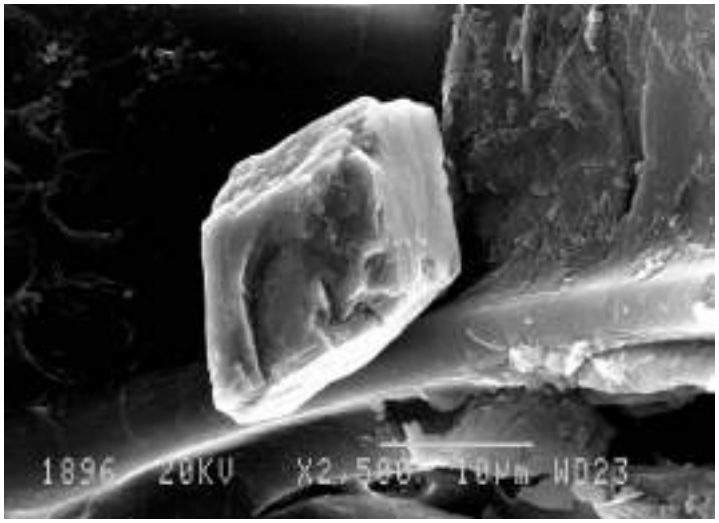
Memeceylon umbellatum
Ms. Snehal Unde

Capparis moonii
Ms. Snehal Unde

Clerodendrum splendens
Ms. Sakshi Kashyap

Hamelia patens
Ms. Sakshi Kashyap





Beautiful architecture of the prismatic crystals in the mature wood of *Syzygium cuminii*. They are magnified approximately 3 lakh times. Picture taken at the SEM facility at Sophisticated Analytical Instrumentation Facility, Botany Department, Panjab University, Chandigarh in 2015.

Photo credits: Dr.V.Vishnuprasad

TEAM MEMBERS

Teacher incharge: Dr. Mahavir Gosavi (HOD, Department of Botany, SIES College)
Editor: Mr. Shubham Patkar
Layout designer:

- Mr.Shubham Patkar
- Ms.Raghavi Vasanth Kumar
- Ms.Jeba reshma
- Ms.Vaishnavi Sawant

Web manager:

- Ms.Dhanashree Pujari (Coordinator)
- Ms.Sneha Swain
- Ms.Meenaz Khan
- Ms.Ruhi Khan
- Ms.Muskan Sayyed

Advisory committe:

- Ms.Ruchika Dani
- Ms. Sandra Balakrishnan

Email address: botanynewletter@gmail.com
Instagram: gulmohar_botany_newsletter
Facebook; Gulmohar- Botany Newsletter