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Early diagnosis and treatment key t fighting psoriatic arthritis

Common symptoms associated with the condition include joint pain, stiffness, and swell For some people, the condition can be mild and cause less-frequent flare-ups. While for others, psoriatic arthritis can be more severe and impact more than one joint at a time. A mild case of psoriatic arthritis affects four or fewer joints, while severe PsA tends to affec more than five joints in the body. For example, it can cause inflammation in the fingers a toes, which is medically referred to as 'dactylitis'. It can also cause tenderness and pain in back of the heel and around the elbows and feet, which is referred to as ‘enthesitis’.

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By Dr Anu Daber

Psoriasis is an autoimmune disorder that causes systemic inflammation which primarily manifests as a skin condition. This inflammation can also spread to other tissues and affect other organs. One such complication which can arise is psoriatic arthritis, which affects three in ten psoriasis patients . Psoriatic arthritis, or PsA can affect the joints and cause damage to the ligaments and tendons. The condition impacts men and women equally . While it is seen commonly in ages 30-45, it can also strike at a younger age.

Common symptoms associated with the condition include joint pain, stiffness, and swelling. For some people, the condition can be mild and cause less-frequent flare-ups. While for others, psoriatic arthritis can be more severe and impact more than one joint at a time. A mild case of psoriatic arthritis affects four or fewer joints, while severe PsA tends to affect more than five joints in the body. For example, it can cause inflammation in the fingers and toes, which is medically referred to as 'dactylitis'. It can also cause tenderness and pain in the back of the heel and around the elbows and feet, which is referred to as ‘enthesitis’. When psoriatic arthritis impacts the spine, it can also lead to ‘psoriatic spondylitis’ and ‘ankylosing spondylitis’ (AS). This affects the axial joints and makes it difficult to move. If left untreated, psoriatic arthritis can not just worsen the pain, but also cause irreversible damage .

Typically, psoriasis symptoms appear first on the skin, sometimes even years before signs of psoriatic arthritis emerge. When they do appear, they are often confused with symptoms of other conditions such as osteoarthritis, rheumatoid arthritis, and gout. Often, they are dismissed as just signs of natural ageing. It is, therefore, important that patients with diagnosed psoriasis and under treatment for it recognize the following signs as perhaps being related to psoriatic arthritis:

-Redness and warmth in the joints
-Pain, swelling, and tenderness in more than one joint
-Indentations in the nails (pitting)
-Ache and stiffness in the lower back, feet, or ankles

Once the doctor recognizes the signs, different tests including X-rays,

ultrasounds, blood tests, skin biopsies or CT scans can confirm the diagnosis of psoriatic arthritis and investigate inflammatory markers.

A bout of psoriatic arthritis can also be accompanied by symptoms such as fatigue, anemia, and mood changes. People who have psoriasis, and psoriatic arthritis are also more likely to develop chronic conditions like diabetes, obesity, Inflammatory Bowel Disease (IBS) as well as acute risks such as eye inflammation (Uveitis), conjunctivitis, and post-inflammatory hypopigmentation or hyperpigmentation. Proper treatment of the condition can thus minimize these risks.

Today, there are effective therapies available to manage psoriatic arthritis. If a patient has a mild form of arthritis, they may only need treatment when they have painful joints. In some cases, when treatment is not as effective, disease-modifying anti-rheumatic drugs and corticosteroid injections may be prescribed. Hydroxychloroquine, a popular anti-malarial drug can also help. Newer available anti-necrosis factor agents and anti-cytokine therapies such as IL-17 inhibitors can also help patients manage skin psoriasis with their arthritis symptoms. Surgery can be considered for patients who have badly damaged joints. In addition to the treatment and medication, it is important that patients follow a suitable, healthy diet and lifestyle modifications to lead a healthy life with the condition. Maintaining a healthy weight, BMI , and keeping blood pressure and cholesterol levels under check also help.

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Diagnostics 5 Min Read

Extracts from two wild plants restrain Covid-19 virus: Study

The researchers identified a handful of hits for extracts that protected against viral e then homed in on the ones showing the strongest activity: Tall goldenrod and eagle fern Both plant species are native to North America and are known for traditional medicinal u by Native Americans.

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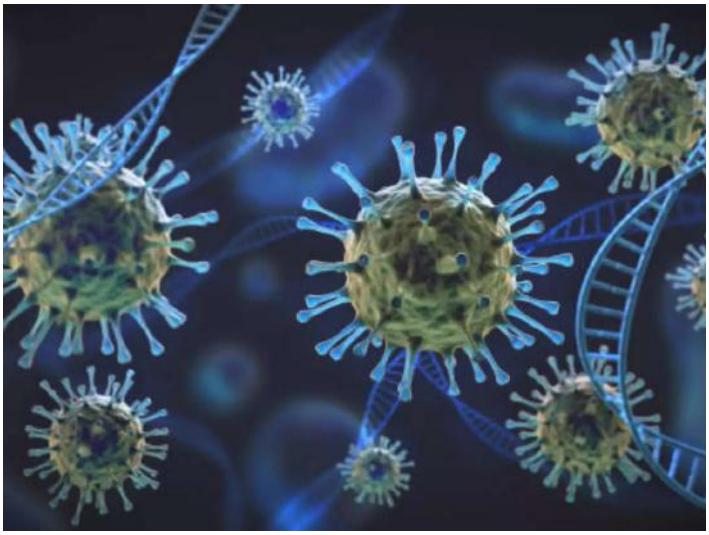

Atlanta: An Emory University study discovered that extracts from two common wild plants decrease the capacity of the virus that causes Covid-19 to infect live cells. The findings were published in Scientific Reports as the first large screening of botanical extracts for effectiveness against the SARS-CoV-2 virus.

In laboratory dish tests, extracts from the flowers of tall goldenrod (Solidago altissima) and the rhizomes of the eagle fern (Pteridium aquilinum) each blocked SARS-CoV-2 from entering human cells.

The active compounds are only present in miniscule quantities in the plants. It would be ineffective, and potentially dangerous, for people to attempt to treat themselves with them, the researchers stress. In fact, the eagle fern is known to be toxic, they warn.

"It's very early in the process, but we're working to identify, isolate and scale up the molecules from the extracts that showed activity against the virus," said Cassandra Quave, senior author of the study and associate professor in Emory School of Medicine's Department of Dermatology and the Center for the Study of Human Health, adding, "Once we have isolated the active ingredients, we plan to further test for their safety and for their long-range potential as medicines against Covid-19."

Quave is an ethnobotanist, studying how traditional people have used plants for medicine to identify promising new candidates for modern-day drugs. Her lab curates the Quave Natural Product Library, which contains thousands of botanical and fungal natural products extracted from plants collected at sites around the world.

Caitlin Risener, a PhD candidate in Emory's Molecular and Systems Pharmacology graduate program and the Center for the Study of Human Health, is first author of the current paper.

In previous research to identify potential molecules for the treatment of drug-resistant bacterial infections, the Quave lab focused on plants that traditional people had used to treat skin inflammation.

Given that Covid-19 is a newly emerged disease, the researchers took a broader approach. They devised a method to rapidly test more than 1,800 extracts and 18 compounds from the Quave Natural Product Library for activity against SARS-CoV-2.

"We've shown that our natural products library is a powerful tool to help search for potential therapeutics for an emerging disease," Risener said, adding, "Other researchers can adapt our screening method to search for other novel compounds within plants and fungi that may lead to new drugs to treat a range of pathogens."

SARS-CoV-2 is an RNA virus with a spike protein that can bind to a protein called ACE2 on host cells. "The viral spike protein uses the ACE2 protein almost like a key going into a lock, enabling the virus to break into a cell and infect it," Quave explains.

The researchers devised experiments with virus-like particles, or VLPs, of SARS-CoV-2, and cells programmed to overexpress ACE2 on their surface. The VLPs were stripped of the genetic information needed to cause a Covid-19 infection. Instead, if a VLP managed to bind to an ACE2 protein and enter a cell, it was programmed to hijack the cell's machinery to activate a fluorescent green protein.

A plant extract was added to the cells in a petri dish before introducing the viral particles. By shining a fluorescent light on the dish, they could quickly determine whether the viral particles had managed to enter the cells and activate the green protein.

The researchers identified a handful of hits for extracts that protected against viral entry and then homed in on the ones showing the strongest activity: Tall goldenrod and eagle fern. Both plant species are native to North America and are known for traditional medicinal uses by Native Americans.

Additional experiments showed that the protective power of the plant extracts worked across four variants of SARS-CoV-2: Alpha, theta, delta and gamma.

To further test these results, the Quave lab collaborated with co-author Raymond Schinazi, Emory professor of pediatrics, director of Emory's Division of Laboratory of Biochemical Pharmacology and co-director of the HIV Cure Scientific Working Group within the NIH-sponsored Emory University Center for AIDS Research. A world leader in antiviral development, Schinazi is best known for his pioneering work on breakthrough HIV drugs.

The higher biosecurity rating of the Schinazi lab enabled the researchers to test the two plant extracts in experiments using infectious SARS-CoV-2 virus instead of VLPs. The results confirmed the ability of the tall goldenrod and eagle fern extracts to inhibit the ability of SARS-CoV-2 to bind to a living cell and infect it.

"Our results set the stage for the future use of natural product libraries to find new tools or therapies against infectious diseases," Quave said.

As a next step, the researchers are working to determine the exact mechanism that enables the two plant extracts to block binding to ACE2 proteins.

For Risener, one of the best parts about the project is that she collected samples of tall goldenrod and eagle fern herself. In addition to gathering medicinal plants from around the globe, the Quave lab also makes field trips to the forests of the Joseph W. Jones Research Center in South Georgia. The Woodruff Foundation established the center to help conserve one of the last remnants of the unique longleaf pine ecosystem that once dominated the southeastern United States.

"It's awesome to go into nature to identify and dig up plants," Risener said, adding, "That's something that few graduate students in pharmacology get to do. I'll be covered in dirt from head to toe, kneeling on the ground and beaming with excitement and happiness."

She also assists in preparing the plant extracts and mounting the specimens for the Emory Herbarium.

"When you collect a specimen yourself, and dry and preserve the samples, you get a personal connection," she said, adding, "It's different from someone just handing you a vial of plant material in a lab and saying, 'Analyze this.'"

After graduating, Risener hopes for a career in outreach and education for science policy surrounding research into natural compounds. A few of the more famous medicines derived from botanicals include aspirin (from the willow tree), penicillin (from fungi) and the cancer therapy Taxol (from the yew tree).

"Plants have such chemical complexity that humans probably couldn't dream up all the botanical compounds that are waiting to be discovered," Risener said, adding, "The vast medicinal potential of plants highlights the importance of preserving ecosystems."

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