

Synthetic Path for Tuberculosis and Chikungunya Inhibiting Flavonoid Molecules

August 25, 2020

Scientists from **Agharkar Research Institute (ARI), Pune, an autonomous institute of the Department of Science and Technology (DST)**, Govt. of India, have come up with the first synthetic route for producing flavonoids molecules related to the treatment of tuberculosis and chikungunya. Preliminary indications have been witnessed regarding probable treatment response to COVID 19.

Disease Inhibiting Flavonoid Molecules

Flavonoid molecules, like rugosa flavonoids, podocare flavone, and isoflavone found to inhibit tuberculosis and chikungunya, **have so far been isolated from plants**. For the first time, **scientists have unearthed the route to synthesize the molecules in the lab, paving the path for ensuring their availability at all seasons without overexploiting the medicinal plants that contain them**. According to the recent work published in the peer-reviewed scientific journal, 'ACS Omega', the team from ARI has developed the **first total synthesis of flavonoids** such as rugosa flavonoids, podocare flavone, and isoflavone. Rugosa Flavonoid is reported from a Chinese medicinal plant Rosa rugosa. Podocare Flavone is isolated from the plant Podocarpus macrophyllus.

Most Ayurvedic products are rich in flavonoids. Flavonoids are mostly present in tomato, onion, lettuce, grape, apple, strawberry, peach, and other vegetables. **A diet rich in flavonoids protects us from diseases related to heart, liver,**

kidney, brain, and other infectious diseases. Right now, the world is facing a traumatic situation due to COVID-19. Since flavonoids boost-up immunity, a flavonoid-rich diet is recommended. Flavonoids are normally isolated from plants. However, **inconsistency in natural products can occur in different seasons, places, and species.** Along with these hurdles, over-exploitation of medicinal plants puts an extra burden on the environment.

To overcome these problems, such products can be developed by synthetic protocols in the laboratory by simple and cost-effective methods. **The synthetic natural products possess a structure and medicinal properties similar to the natural product.** The chemical structure of flavonoids is similar to the female hormone 17-beta-estradiol (estrogen). Therefore, flavonoids can ease the life of women who face problems in the premenopausal stage. While synthesizing rugosa flavonoids, the team has obtained dihydro rugosa flavonoids, which are found to be more potent in inhibiting highly infectious diseases like chikungunya and tuberculosis. Computational analysis of these molecules to inhibit COVID-19 by targeting spike protein, proteases and RdRp is also obtained, and the results are exciting.