

## **Study to help Kinnow fruit juice industry**

New Delhi, March 15: In a welcome development for those involved in the Kinnow fruit juice industry, a team of researchers at the Department of Biotechnology's Mohali-based Centre of Innovative and Applied Bioprocessing has come out with a technique to convert the waste generated by units producing juice from Kinnow fruit into a nutritious food supplement.

Kinnow is the second most important fruit after grapes and is cultivated in almost 125 countries with a total production of 1,155 million tonnes per annum. It is one of the major citrus fruit crops in north India. It is cherished fresh and the peak harvesting season is from November to February.

With increasing demand and consumption of Kinnow fruit in the form of juice, large quantities of waste in the form of peels, pulp and seeds are also getting generated. In the absence of any technique to process them, they are dumped randomly posing severe environmental problems. This despite the fact that the waste contains high sugar content and nutrients. Peels particularly are a rich source of cellulose, pectin, hemicelluloses, lignin, essential oils and phenolic compounds. Bitterness in the waste residues is one of the major problems that come in the way of reusing them.

A team of scientists at DBT-CIAB has come up with a solution. They have found that an enzyme called Naringinase can reduce the level of a compound called Naringin in the waste, which is responsible for the bitter taste by up to 65.95 percent. The enzyme worked by converting Naringin into another compound called Naringenin, which is not bitter. The debittered kinnow waste was then supplemented for the preparation of antioxidant and nutrient-enriched pasta.

They have published a report on their work in the Journal of Food Science and Technology. The team consisted of Gisha Singla, Parmjit S. Panesar, Rajender S. Sangwan and Meena Krishania.

Keywords: Department of Biotechnology, waste, food supplement, citrus, peels, pulp, seeds, environment, sugar, nutrients, essential oils, enzyme, Naringinase, Naringin, Naringenin, antioxidant, pasta

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