IRRI develops ultra-low GI, high-protein variety rice

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While the GI value stands at 44, this IRRI-developed rice contains 16 per cent protein too

There is good news for rice lovers who are worried about eating because of fears that it will make them diabetic!

Scientists at the Philippines-based International Rice Research Institute (IRRI) have developed rice with an ultra-low glycemic index (below 45).

Also, protein content in this milled rice grain is about 16 per cent, double the levels in the existing rice varieties, making it an attractive option for protein-conscious people.

GENES IDENTIFIED

"We have identified the genes responsible for low and ultra-low glycemic index (GI) in rice. This discovery will be able to convert popular rice varieties into low and ultra-low GI for refined white rice through conventional breeding methods, keeping high-quality grain and without compromising yield," Nese Sreenivasulu, Head of IRRI's Consumer-driven Grain Quality and Nutrition Research Unit and the lead of this discovery, told *businessline*.

In Hyderabad recently, Sreenivasulu said many of the existing rice varieties have a GI ranging from 70 to 77, which is not considered healthy for diabetics.

RIVALLING MILLETS

With a high GI, rice is digested rapidly, releasing glucose quickly into the bloodstream, causing sugar spikes.

The new variety has a GI level of 44, which can even rival millets that are being presented as a safer alternative for people with diabetes.

The rising incidence of diabetes is a concern in Asia, particularly in India, which has a high prevalence of 101 million Type 2 diabetics and 130 million pre-diabetics.

To address this, IRRI has been working on developing rice with low GI properties and enhanced protein content.

"We screened an extensive collection of thousands of accessions among 1.32 lakh rice accessions present in the genebank and identified low GI donors.

"A major breakthrough was the development of an 'in-vitro glycemic index testing system' that mimics the human digestive system, significantly reducing the cost and time compared to human trials. This allowed them to screen a larger number of samples," he said.

HIGHER PRICE

"We successfully combined both the ultra-low GI and high protein traits into Samba Masuri. This new variety also shows an increased yield of up to 6.2 tonnes per hectare in the Philippines conditions due to the incorporation of another gene (OSTPR) that increases panicle branching.

"The maturity duration has also been reduced from 140 to 110 days," he said.

Sreenivasulu highlighted the potential of these varieties for both domestic consumption and export markets, where low GI rice can fetch significantly higher premiums (around $1,600 per tonne) compared to regular non-basmati rice (around $350 a tonne).

He said the IRRI is collaborating with the Odisha government to establish an end-to-end value chain for these nutritious varieties, including a dedicated processing facility in Bhubaneshwar.