

## **Punjab Agricultural University creates a novel wheat type to help control blood sugar and obesity.**

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The Punjab Agricultural University (PAU) appears to be shifting its research focus from “quantity” to “quality” and from “food security” to “nutritional security.”

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Eating chapatis prepared from this wheat, known as PBW RS1, with RS standing for resistant starch, would not result in an instant and quick spike in glucose levels. Instead, the high amylose and resistant starch content ensures that glucose is delivered into the circulation more slowly. Slower digestion also enhances satiety; a person who would normally have four chapatis from regular wheat might now feel full after only two.



***The taste, color and texture of chapatis made from PBW RS-1 is same as normal wheat varieties, say scientists at PAU. (Image source: PAU)***

It has almost the same amount of total starch as other wheat types (66-70%). However, it possesses 30.3 percent resistant starch content, compared to 7.5-10 percent for other kinds such as PBW 550, PBW 725, HD 3086, and PBW 766, according to PAU studies done over four years. The other kinds have 56-62 percent non-resistant starch, but PWB RS1 has nearly half (37.1 percent). Similarly, PBW RS1 has 56.63 percent amylose, whereas other kinds include just 21-22 percent.

## LOWER GLYCEMIC INDEX

GI is value of how quickly foods can increase blood sugar

	New variety	Checks*		
	PBW RS1	PBW 550	PBW 725	PBW 766
Chapati	43.1	66.7	66.9	65.3
Atta biscuits	32.4	51.4	54.6	52.2

\*Comparison with other varieties

“Chapatis and biscuits made from its whole grain flour have a lower glycemic index (a value used to measure how specific foods raise blood sugar levels), which is linked to the starch’s decreased digestibility.” As a result, it can help reduce the incidence of diet-related disorders such as obesity and diabetes (particularly type 2),” said Achla Sharma, senior wheat breeder at PAU, which was named the country’s top state agricultural institution by the National Institute Ranking Framework in 2023.

A team of wheat breeders lead by Dr. V. S. Sohu, head of the department of plant breeding and genetics, worked on the variety for ten years. PAU is the first to generate this variety by combining five unique alleles (genes) controlling resistant starch levels.

PAU had previously introduced two kinds on nutritional lines – PBW Zn1 with high zinc content and PBW1 Chapati with premium chapati quality that kept fresh for a long time – but none had the same attributes as PBW RS1.

Milletts are considered healthful since they do not induce a surge in blood sugar levels, according to Sharma. Diabetics and obese people are even advised to avoid wheat entirely. “However, wheat production and consumption are much higher, and not everyone can eat millets on a daily basis.” “Our idea was to breed a wheat variety that feels and tastes like regular wheat but has a higher RS and a lower glycemic index,” she explained.

However, PBW RS1 has a severe disadvantage that may prevent farmers from cultivating it. At PAU’s field experiments, the average grain production from the variety was 43.18 quintals per hectare. This is less than the average yield in Punjab, which has reached 52 quintals in certain years, with many farmers reaping 60 quintals or more.

PAU vice-chancellor Dr Satbir Singh Gosal, on the other hand, thought that a start towards nutritional security needed to be made. He has encouraged the Punjab government to market PBW RS1 flour as having “high medicinal and nutritional value.” The wheat might “fetch a higher price” from consumers if properly marketed, akin to the premium millers pay for basmati paddy above conventional parmal kinds.

“Yes, decreasing production is an issue. However, PBW RS1 should be designated as a special-trait variety with a high enough price to entice farmers to produce it. “We pitched the idea to Markfed (the Punjab State Cooperative Supply & Marketing Federation) to market it as a special quality flour,” Gosal told The Indian Express, adding that PBW RS1 is the country’s first enhanced wheat type cultivated for quality rather than quantity.

Sharma stated that seeds for the new type will be available to farmers in September, allowing them to sow during the forthcoming rabi season. PBW RS1 is “completely resistant” to yellow rust and “moderately resistant” to brown rust fungal infections, in addition to its nutritional qualities.

“Chapatis and biscuits made from its flour taste exactly like regular wheat.” Bakers and food processors would benefit from the high amylose/resistant starch ratio, which translates to more total dietary fibre. “They can make products without adding fibre or additives from other sources to their formulas,” she explained.

Reference: <https://agronfoodprocessing.com/punjab-agricultural-university-creates-a-novel-wheat-type-to-help-control-blood-sugar-and-obesity%ef%bf%bc/>