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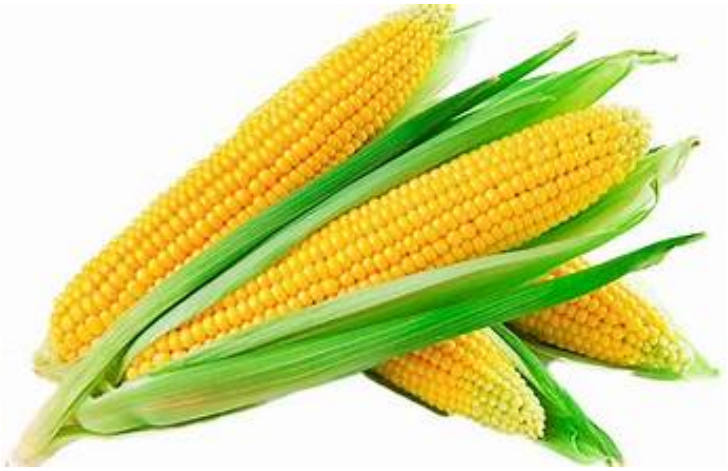
MNS-University Researchers Unlock Maize Protein for Sustainable Food Innovation



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Multan, Pakistan—Researchers at Muhammad Nawaz Shareef University of Agriculture, Multan (MNS-UAM) have made significant breakthroughs in studying Zein, a naturally occurring protein from maize, opening doors to sustainable food technologies, biodegradable packaging solutions, and innovative nutritional products.

The research team, including Ms. Misbah Sharif (PhD Scholar), Dr. Ambreen Naz (Associate

Professor), Prof. Dr. Umar Farooq (Dean), and Dr. Kashif Razzaq (Associate Professor), demonstrated Zein's potential as a safe, eco-friendly material for next-generation food applications. Zein is biodegradable, odorless, tasteless, and capable of forming thin, stable films ideal for edible coatings and packaging, aligning with the global shift toward sustainable and environmentally responsible solutions.

To enhance its functionality, the team applied enzymatic hydrolysis using Papain, Flavourzyme, and Alcalase. This method improved Zein's water solubility, antioxidant activity, emulsification, foaming properties, and bioavailability, making it suitable for functional foods, nutraceuticals, sports nutrition, and advanced food formulations.

The research highlights multiple applications, including biodegradable packaging films, coatings to extend shelf life of fruits and bakery items, encapsulation of bioactive compounds, and improving food texture, stability, and nutritional value.

"This study not only strengthens Pakistan's scientific research in food innovation but also addresses global demands for natural, plant-based, and sustainable solutions in both the food and packaging industries," said the research team.

By unlocking Zein's potential, MNS-UAM researchers are contributing to eco-friendly packaging, enhanced food safety, and improved nutritional products, positioning maize protein as a

valuable, renewable resource for the future of the global food sector.