Assessing Rice Bran's Protective Efficacy against Porcine Rotavirus Infection in IPEC-J2 Cells

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To address issues concerning combating rotavirus infection in developing countries, this study investigated various rice brans' potential protective efficacy in treating and preventing rotavirus infections. The effectiveness of Calrose, IAC600, and IR64 rice bran extracts in providing protection to porcine intestinal epithelial cells (IPEC-J2) against porcine rotavirus (PRV-OSU) infection was evaluated by (i) determining a non-toxic quantity of rice bran, (ii) monitoring viral infection after treatment, and (iii) observing the ability of rice bran extract to promote cellular mucin production after rotavirus infection. Toxicity testing of the rice bran extracts for IPEC-J2 cell culture was conducted by Calcein AM cell viability staining assay. After treatment exposure with 300 µg/mL extract, quantifying rotavirus infectivity inhibition was conducted by cell culture immunofluorescence (CCIF). Data indicated that rice bran extracts showed a trend in reducing rotavirus infectivity when compared to the control. Furthermore, mucin production by cells was detected by periodic acid-Schiff (PAS) staining. Analysis of mucin production found correlating trends between the treatment effectiveness in rotavirus inhibition and mucin secretion with IR64 displaying the greatest efficacy in both. Overall, the conducted study was highly suggestive of rice bran's efficacy in promoting mucosal barrier health in order to reduce rotavirus infection.

Awards Won:
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