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Disruption of gastrointestinal immune function prevented by a yeast fermentate product

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The gut barrier integrity plays a crucial role in health, preventing the translocation of the luminal contents into circulation. One in particular is lipopolysaccharides (LPS), a toxic component of Gram-negative bacteria that is a potent stimulator of inflammation. Increased intestinal permeability accompanies different pathological conditions. Heat stress was shown to disrupt the intestinal barrier function and change the expression of tight junction (TJ) proteins, responsible for maintaining the integrity of the gut. The gut barrier integrity is key for intestinal homeostasis and overall for the health status of the host. It was shown that microbiota and its metabolites can regulate the gut barrier function. Prebiotics have been proposed as a promising approach to normalize microbiota and as a result, improve the gut barrier integrity. The main aim of this study was to evaluate the protective effect of a yeast fermentate product EpiCor (EH) on the intestinal barrier integrity during heat stress. Rats were orally treated with the EH prebiotic product (7 mg/kg in 1 mL of PBS) or with PBS for 14 days and exposed to heat stress conditions (45°C for 25 min). Control rats received the same treatment but were kept at room temperature. Expression of tight junction (TJ) proteins (claudin 1, occludin, ZO-1 and JAM-A) in the intestine were analyzed by Western blot in all rats, a number of Paneth and goblet cells was also calculated in all samples. Pre-treatment with EH prevented the adverse effects of heat: Decrease in the number of Paneth and goblet cells, elevation of LPS in circulation and decrease of TJ proteins expression. Our results demonstrated efficacy of EH treatment in protecting the integrity of the intestinal barrier in the heat stress model. We speculate that EH could be used for improvement of the gut barrier function in certain pathological conditions.

Biography

Henri Alexandre GIBLOT Ducray was graduated from the St. Ambrose University, Iowa, with a BSc in Biology with a Biomedical Science concentration and is currently pursuing PhD at Auburn University, Alabama, in Anatomy, Physiology and Pharmacology Department. He is a Graduate Research Assistant for Dr. Sorokulova and has been involved in several of her research projects.

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