Probiotic for Heat Stress

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Technology description

Overview

Heat stress can affect the body’ s defenses and barriers to bacteria, allowing microbes in the gut to slip past and enter the blood, organs, or other areas and induce inflammation and other immune responses. Clearing the bacteria and repairing resulting damage slows the body’ s recovery from heat stress. A new probiotic has been shown to help maintain the integrity of the intestinal lining and block the movement of microbes from the gut into blood during heat stress. By taking this probiotic prior to heat stress, a person or animal can be better protected against the effects of heat stress and recover more quickly to full health. Such protection could be beneficial for athletes, workers, soldiers, animals, and others.

Rats were administered probiotic spores of Bacillus subtilis orally two days before exposure to 45°C (113°F). Body core temperatures reached 40°C (104°F), a temperature that is reached in humans and animals during fever or active exercise. Treatment with the probiotic helped to maintain normal intestinal villi height and mucosal thickness, reduced translocation of bacteria from the gut to circulating blood (measured by LPS and colony counts), reduced breakdown of red blood cells, and maintained normal or reduced levels of cytokines associated with heat stress.

Advantages

Prevents movement of bacteria from the gut to blood during heat stress
Helps maintain the intestinal lining (reduces shrinkage of intestinal villi and mucosa)
Inexpensive to produce, easy oral administration, and can be stored at room temperature

Institution

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