



PJ34 Protects Intestinal Epithelial Tight Junction Barrier Integrity from Heat Stroke-Induced Damage

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SUMMARY. The intestinal tight junction (TJ) barrier plays a key role in intestinal barrier. N-(6-oxo-5,6-dihydro-phenanthridin-2-yl)-N,N-dimethylacetamide HCl (PJ34), a poly (ADP-ribose) polymerase-1 (PARP-1) inhibitor, has been shown to attenuate heat shock-induced intestinal hyperpermeability and heat stroke-induced cytokine response. The aim of the present study is to investigate whether PJ34 could protect intestinal TJ barrier from heat stroke-induced damage. Sprague-Dawley (SD) rats untreated or treated with PJ34 were subjected to heat exposure. FITC-dextran 4, 000 Da (FD-4), serum endotoxin, TNF- α , and interleukin-6, small intestine histology, ultrastructural morphology were measured. Furthermore, the expression of occluding, tight junction protein zonula occludens-1 (ZO-1) and heat shock protein was investigated. The results showed that PJ34 could attenuate heat stroke-induced intestinal TJ damage, and alleviate endoxemia and systemic inflammatory response. Further western blotting experiments demonstrated that PJ34 significantly increased the expression of occludin, ZO-1, heat shock proteins and heat shock transcription factor-1 (HSF-1). In conclusion, PJ34 could maintain intestinal TJ barrier integrity by improving the expression and localization of proteins during heat stroke, which benefits the deep understanding the mechanism of the potential therapeutic effect of PJ34.

KEY WORDS: Gastrointestinal barrier, Heat shock proteins, Heat stroke, Poly (ADP-ribose) Polymerase, Tight junction (TJ).

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