



Camel whey protein enhances lymphocyte survival by modulating the expression of survivin, bim/bax, and cytochrome C and restores heat stress-mediated pathological alteration in lymphoid organs

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Abstract:

Objective(s): Heat stress (HS) is a catastrophic stressor that dampens immunity. The current study investigates the effect of dietary administration with camel whey protein (CWP) on apoptotic pathway caused by HS. **Materials and Methods:** Forty-five male mice were divided into three groups: a control group; HS group; and HS mice that were orally supplemented with CWP (CWP-HS group). **Results:** We found that reactive oxygen species (ROS), pro-inflammatory cytokines (IL-6), and C reactive protein (CRP) were elevated in the HS group along with a significant increase of caspase-9 and -3 and decrease of total antioxidant capacity (TAC). HS mice revealed impaired phosphorylation of Bcl-2 and Survivin, as well as increased expression of Bax, Bim and cytochrome C. Additionally, we observed an aberrant distribution of HSP-70 expressing lymphocytes in the spleen and thymus of HS mice. Moreover, histopathological examination showed alterations on the architectures of immune organs. In comparison with CWP-HS group, we found that CWP restored the levels of ROS, IL-6, TAC and CRP induced by HS. Furthermore, CWP restored the expression of Bcl-2/Bax, improved the histopathological changes in immune organs and HSP-70 distribution in the spleen and thymus. **Conclusion:** Our findings revealed the possible ameliorative role of CWP supplementation against damages induced by exposure to HS.

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