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[\[PDF \(6190K\)\]](#) [\[References\]](#)**Acute stress augments innate immunity in the liver and increases hyaluronan levels in the tissues and blood of mice**[Masashi Inoue](#)<sup>1)</sup>, [Yuh Kuwano](#)<sup>1)</sup>, [Chikako Tomiyama-Miyaji](#)<sup>2)</sup>, [Mayumi Watanabe](#)<sup>1)</sup>, [Eisuke Kainuma](#)<sup>1)</sup>, [Hongwei Ren](#)<sup>1)</sup>, [Jiwei Shen](#)<sup>3)</sup>, [Kyosuke Miyazaki](#)<sup>4)</sup> and [Toru Abo](#)<sup>1)</sup>

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**ABSTRACT**

The effect of acute stress on the immune system was examined in mice. Restraint stress decreased the number of lymphocytes in the liver, whereas the number of lymphocytes remained unchanged in the spleen and thymus. In the liver, the decrease in number appeared at 1.5 h and fell to a third of the control level at 3 h. The proportions of IL-2R $\beta$ <sup>+</sup>CD3<sup>int</sup> cells, NKT cells, CD44<sup>+</sup> T cells and B cells were changed in the liver. The absolute numbers of IL-2R $\beta$ <sup>+</sup>CD3<sup>int</sup> cells, NKT cells and CD3<sup>+</sup>CD44<sup>+</sup> cells remained constant in the liver under the stress, while those of total T cells and NK cells decreased. The levels of hyaluronan (HA) in various tissues and sera were then examined. The expression of hyaluronan binding protein (HABP) was found to increase in the skin, liver and kidney as shown by immunohistochemical staining. An increase of HA in sera due to stress was seen at 3 h. The present results suggest that the activation of CD44<sup>+</sup> T cells and unconventional T cells (*i.e.*, innate immunity) in the blood and the elevated levels of HA (ligand for CD44) in the tissues and blood are crucial responses to acute stress exposure.

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