

# **Obstructive Jaundice alters CD44 Expression in rat small intestine**

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摘要

## **Abstract**

Hypothesis: CD44 is an adhesion molecule expressed by neutrophils, lymphocytes and epithelial cells. CD44 is involved in cell-cell and cell-matrix binding. In addition to lymphocyte trafficking, CD44 also plays a crucial role in the maintenance of intestinal villus integrity. We hypothesize that obstructive jaundice may alter CD44 expression in the rat small intestine and oral glutamine intake can restore the altered CD44 expression in the small intestine of the rat undergoing obstructive jaundice. Materials and Methods: In a prospective animal model study at a university hospital, 41 Sprague-Dawley rats were randomized to 4 groups. Group A (n = 13, control) underwent a sham operation. Group B (n = 12, obstructive jaundice for 1 week) underwent common bile duct ligation. Group C (n = 8, obstructive jaundice for 2 weeks) underwent common bile duct ligation. Group D (n = 8, obstructive jaundice for 2 weeks) underwent common bile duct ligation with oral glutamine intake daily. After 1 and 2 weeks, segments of the proximal jejunum and distal ileum were harvested from groups A and B and groups C and D, respectively. Immunohistochemical expression of CD44 on the cell surface was then evaluated and recorded. Comparisons among the 4 groups were performed. Results: In the 1-week obstructive jaundice group,  $173.8 \pm 24.0$  cells/1,000 enterocytes of the proximal jejunum expressed surface CD44, while  $137.0 \pm 13.8$  cells were stained in the control group ( $p < 0.001$ ). In the 1-week obstructive jaundice group,  $169.8 \pm 20.7$  cells/1,000 enterocytes of the distal ileum expressed surface CD44, while  $119.5 \pm 20.8$  cells were stained in the control group ( $p < 0.001$ ). In the 2-week obstructive jaundice group, the number of cells expressing surface CD44 were significantly decreased both in jejunum ( $112.1 \pm 17.0$ ,  $p = 0.002$ ) and ileum ( $100.1 \pm 12.5$ ,  $p = 0.028$ ) when compared with those of the control group. With daily oral glutamine intake in group D, the number of cells expressing surface CD44 in the

jejunum ( $149.3 \pm 29.7$ ) was restored to that of the control group ( $p = 0.302$ ) and the number of cells expressing surface CD44 in the ileum ( $140.4 \pm 23.0$ ) was even higher than that of the control group ( $p = 0.045$ ). Conclusion: Obstructive jaundice for 1 week initially upgraded CD44 expression in the rat small intestine and the CD44 expression later became significantly depressed after obstructive jaundice for 2 weeks. Oral glutamine intake daily could effectively restore the CD44 expression in the small intestine of the rat undergoing obstructive jaundice for 2 weeks