

**Total scavenger capacity of erythrocytes and plasma is a good predictive factor in inflammatory bowel diseases**

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Free radical reactions are involved in immuno-inflammatory processes e.g. respiratory burst of tissue macrophages, enteroendocrine biochemical pathway, arachidonic acid cascade and the P450 system of the intestinal tract. However, nutrients can also contain free radical precursor molecules.

The total scavenger capacity is a result of multifactorial defense mechanisms against harmful free radicals, both of internal and external origin. Tissues, cells and subcellular particles exhibit different specific defense activity in pathological processes, which involve free radical formation. In this study, the antioxidant defense system was measured in erythrocytes and plasma of patients with Crohn's disease and ulcerative colitis. A chemiluminescence method was developed using a Berthold type luminometer for screening.

22 patients (13 males, aged  $34.1 \pm 11.1$  and 9 females, aged  $41.4 \pm 10.4$ ) with different forms of Crohn's disease (7 patients inactive, 10 moderate and 5 severe) were investigated. Another cohort of 22 patients (10 males, aged  $35.9 \pm 11.1$  and 12 females, aged  $40.1 \pm 15.9$ ) with ulcerative colitis were also assessed into three groups according to the severity of the disease: 4 inactive, 10 moderate and 8 severe. 26 healthy individuals (10 males, aged  $26.6 \pm 11.3$  and 16 females, aged  $34.24 \pm 13.62$ ) served as control.

In Crohn's disease we did not find correlation between the low scavenger capacity of erythrocytes and the severity of the disease, while scavenger capacity of the plasma showed significant alterations. In ulcerative colitis the total scavenger capacity of erythrocytes showed a non-significant increase in the inactive and moderate stages. It is assumed that in Crohn's disease the defensive antioxidant capacity of the erythrocytes is exhausted due to chronic inflammation, a long life-cycle or a possible bone marrow defect. Evaluation of chemiluminescent studies was combined with assessment of clinical data, vitamin A and E levels, and determination of the erythrocyte catalase and glutathione peroxidase activities.