

Reduced glutathione content and activity of GSH-related activity in the cases of colorectal cancer

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The gastrointestinal system is particularly susceptible to constant and potentially injurious free radical chemical attack what can lead to carcinogenesis. An important role in the overall antioxidant defense strategy utilized by cells to defend against free-radical-induced oxidative stress is played by glutathione and enzymes of glutathione metabolism, glutathione peroxidase and glutathione reductase. The aim of this study was to examine these parameters in the 49 patients with colorectal cancer. In these cases, the reduced glutathione level was decreased while glutathione peroxidase and glutathione reductase activities were increased in tumor tissues in comparison to morphologically unchanged tissues. The glutathione concentration in the blood serum of patients was slightly decreased in comparison with glutathione concentration in the blood serum of healthy people. The level of this parameter was higher in the week following surgery. However, the antioxidant enzyme activities were decreased in the cancer tissues. The activity of glutathione peroxidase had been significantly decreased before surgery in comparison to control group and insignificantly decreased after surgery. However, activity of glutathione reductase had been decreased significantly before surgery and increased during next week after surgery but did not reach the control value. The obtained results indicate significant changes in antioxidant capacity of tumor tissues and serum from patients with colorectal cancer. These changes may be important for destruction of tumor tissues.