

Effects of exercise training on hematological and biochemical parameters: data from a rat model of mammary cancer.

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Breast cancer is the most common oncological disease among women. The lifestyle, including physical activity and diet may prevent it. This study assessed the impact of exercise training on hematological and biochemical parameters in a rat model of mammary cancer.

Twenty-eight female rats were randomly divided into four groups (n=7): Sedentary (SED); SED+N-methyl-N-nitrosourea (MNU); Exercised (EX); and EX+MNU. SED+MNU and EX+MNU animals received an intraperitoneal injection of the carcinogen MNU (50mg/Kg), at seven weeks of age. Exercised animals were trained 3 days/week for 18 weeks, by climbing a 1-meter-high homemade ladder, 8-12 dynamic movements/climb and 4-8 climbs/session. At the end of the study, animals were sacrificed by intraperitoneal injection of ketamine and xylazine, followed by exsanguination by cardiac puncture. Blood samples were collected for hematological and biochemical analysis. Data were compared using SPSS.

Erythrocytes and hemoglobin were higher in EX+MNU group when compared with remaining groups ($p<0.05$). Leukocyte count revealed increased neutrophils in the MNU vs. EX group ($p<0.05$) and lymphocytes in EX+MNU vs. SED group ($p<0.05$). Serum albumin, cholesterol, urea, alanine aminotransferase and creatinine kinase-MB levels were similar among groups ($p>0.05$). Glucose and triglycerides were elevated in MNU group when compared with EX group ($p<0.05$).

The notable rise in erythrocytes suggests that exercise positively impacts their production, counteracting the bone marrow's negative response to breast cancer. The concurrent elevation of hemoglobin was expected, being a component of erythrocytes. Neutrophilia in the MNU group and lymphocytosis in the EX+MNU group suggested an ongoing inflammatory response triggered by cancer. The exercised also promoted a decrease in glucose and triglyceride levels, contributing to lower systemic values of these parameters.

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