EFFECT OF CRYOTHERAPY ON TOTAL ANTIOXIDANT CAPACITY IN BLOOD PLASMA AND REDUCED-GLUTATHIONE CONCENTRATION IN ERYTHROCYTE IN PATIENTS WITH DIFFERENT DISEASES

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Using cold in therapy was known many years ago and applied successfully in folk or natural medicine. Recently, conventional medicine is looking for non-pharmacological methods to aid traditional therapy. All alternative and natural treatments could be complementary means of therapy, in case of correct choice and systematic application.

The aim of the study was to examine the total antioxidant capacity (TAC) of blood plasma and GSH concentration in red blood cells of patients with spin and joint degenerative disease and rheumatoid arthrosis, before and after cryotherapy. Cryotherapy was used in combination with pharmacological treatment, rehabilitation and biologic restitution. Therapy was based on applying cryogenic temperatures on the body surface (from –100°C to –160°C, 3 min) for induction of physiological reactions to cold. It included 8–10 two-part treatments, one daily. Patients spent 3 minutes in a cryogenicl chamber and then they were subjected to intensive kinesitheraphy, for about 20–30 minutes. The study involved 20 and 15 patients for total antioxidant capacity and GSH concentration, respectively.

TAC was estimated by $ABTS^{\cdot+}$ decolorization assay (Re *et al*., 1999) both for "fast antioxidants" – FA (e.g. uric acid, ascorbate) and "slow antioxidants" – SA (e.g. tyrosine). Decolorization was measured at 10 s and 30 min after addition of the sample, respectively. TAC was expressed in µmol of Trolox equivalents per litre (T.e. l^{-1}). Erythrocyte-GSH level was assessed according to the Ellman's method (1959).

There were no significant differences in both total antioxidant capability dependent on "fast antioxidants" and that dependent on "slow antioxidats" in the blood plasma before and after cryotherapy.

The concentration of erythrocyte GSH increased significantly after therapy when compared with values for samples collected before the treatment ($p < 0.02$).

These findings suggest alterations in GSH level, the major low-molecular weight antioxidant of red blood cells after whole-body exposure to low temperatures.