

POSSIBLE ANTIOXIDANT EFFECT OF SULPHUR MUD- BATH THERAPY IN TREATMENT OF OSTEOARTHRISIS

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Objective: Osteoarthritis (OA), the most common degenerative osteoarticular disease, is characterized by loss of the homeostasis between the anabolic and catabolic processes of the bone tissue. This alteration induces degradation of the articular cartilage, sinovium inflammation and the bone proliferation. Clinically these pathological changes produce pain during articular movements, functional difficulty and articular stiffness. Most studies have demonstrated that mud-bath therapy acts on the symptomatology of OA, however, the mechanism of action has not been elucidated (*Costantino et al., 2002*). The literature suggests an increase in the production of TNF- α , IL1, MMP and free radicals formation (reactive oxygen metabolites [ROS], or nitric oxide [NO]) during OA. On the basis of these considerations the aim of our study was to evaluate the possible antioxidant role of mud-bath therapy with sulphur mineral water and safety in subjects suffering of OA.

Materials and Methods: The study was performed on 36 OA subjects as diagnosed according to the American College of Rheumatology criteria. The patients were underwent 12 sessions of mud-bath therapy with sulphur mineral water from Telesse Terme (Benevento-Italy). At the beginning and at the end of the considered treatment we have quantified: the adverse reactions; the serum concentration of reactive oxygen radicals [ROS], expressed in U.Carr. (1 U.Carr. =0.08mg/dl of H₂O₂). The statistic analysis has been performed with Student's t-test with a confidence level of 95%

Results: The results of this preliminary clinical-experimental investigation demonstrate that sulphur mud-bath therapy induced a significant ($P < 0.01$) reduction of the [ROS] (344 \pm 61 U.Carr. *versus* 306 \pm 49 U.Carr.). Moreover, at the end of the treatment 53% of the subjects showed [ROS] values in the normal range: 250-300 U.Carr. No significant adverse reactions have been observed.

Conclusions: Our data show a probable antioxidant effect of sulphur mud-bath therapy in OA. In fact, we have found that this thermal treatment induced: a significant reduction of ROS and NO, compounds involved in the genesis and maintenance of degenerative processes in OA. The reduction of the [ROS] could be due to the effectiveness of the mud-bath therapy to reduce the inflammation response and the ROS release from the leucocytes. In conclusion our data suggest that thermal therapy with sulphur mineral water could represent an important phase of the therapeutic strategy of OA.