

## Psoriasis, Oxidative Stress and spa Therapy

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The scientific evidence show the importance of oxidative stress in the pathogenesis of numerous diseases including the Psoriasis. The plaque form of Psoriasis is tractable at the spa and is the most common clinical form of psoriasis. Psoriasis has a multifactorial pathogenesis, in which predisposing genetic factors and environmental trigger factors (such as local trauma, streptococcal infections, emotional stress, drugs, smoke, etc.) interact with each other by triggering a specific immune response mediated by T lymphocytes. Various studies have also shown the importance of oxidative stress in the induction of psoriasis by increased production of free radicals and/or decreased function of the endogenous antioxidant defenses (Briganti et al., 2003 - Wozniack et al., 2007). Literature data (Costantino et al., 2009 - Braga et al., 2013) show a possible antioxidant effect of mineral waters, in particular those sulphurous. On the basis of the above considerations, the purpose of the research was to evaluate effectiveness, safety and a possible antioxidant effect of spa therapy in subjects suffering from plaque psoriasis of mild to moderate. The study was conducted on a sample of 58 subjects (50% women and 50% men) with a mean age of  $52 \pm 13$  years (age range 14-78 years) divided into 2 groups: A and B. The psoriatic patients of group A (n=33) was subjected to sulphurous mud-balneotherapy from Terme of Telese-Impresa A. Minieri SpA (Benevento-Italy) or from Terme Rosapepe sas (Contursi Terme- Salerno-Italy). In the patients of group B (n=25), composed of subjects in pharmacological topical therapy for plaque psoriasis, was associated the mud-balneotherapy carried out in the same way and modality in which it was made in the group A. After 2 weeks were assessed: the PASI index, plasma concentration of ROMs (by d-ROMs Test, Diacron-Grosseto-Italy) and the impact of the treatments used on quality of life for psoriatic people tested by the DLQI questionnaire. The results, expressed as the arithmetic mean  $\pm$ SD, were compared with Student's t test for normally distributed data and with the Wilcoxon-Mann-Whitney test in data with non-normal distribution. P values  $\leq 0.05$  were considered statistically significant. The collected data showed in psoriatic patients treated with sulphurous mud-balneotherapy, alone (group A) or in combination with drug therapy (group B), good local and systemic tolerability and no significant adverse reactions during treatments considered; significant ( $p < 0.05$ ) reduction of plasma [ROMs] (group A:  $404 \text{CARR.U.} \pm 68 \rightarrow 363 \text{CARR.U.} \pm 54$ ; group B:  $351 \text{CARR.U.} \pm 47 \rightarrow 300 \text{CARR.U.} \pm 46$ ) at the end treatment vs basal values. The comparison between the mean values of the plasma [ROMs] measured after treatment in group B versus group A demonstrated significant ( $p < 0.05$ ) reduction. In conclusion, the results of this study show that the sulphurous mud-balneotherapy can play an important role in the treatment strategies for plaque psoriasis of mild to moderate and can improve quality of life as demonstrated by DLQI questionnaire.