

# Ozone autohemotherapy induces long-term cerebral metabolic changes in multiple sclerosis patients

[https://www.zotero.org/groups/isco3\\_ozone/items/collectionKey/7FIHMJKH/itemKey/9CUDXHCB](https://www.zotero.org/groups/isco3_ozone/items/collectionKey/7FIHMJKH/itemKey/9CUDXHCB)

Authors Molinari, F., Simonetti, V., Franzini, M., Pandolfi, S., Vaiano, F., Valdenassi, L., Liboni, W.

## Abstract

Ozone autohemotherapy is an emerging therapeutic technique that is gaining increasing importance in treating neurological disorders. A validated and standard methodology to assess the effect of such therapy on brain metabolism and circulation is however still lacking. We used a near-infrared spectroscopy (NIRS) system to monitor the cerebral metabolism and a transcranial Doppler (TCD) to monitor the blood flow velocity in the middle cerebral arteries. Fifty-four subjects (32 neurological patients and 22 controls) were tested before, during, and after ozone autohemotherapy. We monitored the concentration changes in the level of oxygenated and deoxygenated haemoglobin, and in the level of the Cytochrome-c-oxidase (CYT-c). As a primary endpoint of the work, we showed the changes in the brain metabolism and circulation of the entire population. The concentration of oxygenated haemoglobin increased after the reinjection of the ozoned blood and remained higher than the beginning for another 1.5 hours. The concentration of the deoxygenated haemoglobin decreased during the therapy and the CYT-c concentration markedly increased about 1 hour after the reinjection. No significant changes were observed on the blood flow velocity. As secondary endpoint, we compared the NIRS metabolic pattern of 20 remitting-relapsing multiple sclerosis (MS) patients against 20 controls. We showed that by using only 7 NIRS variables it was possible to characterize the metabolic brain pattern of the two groups of subjects. The MS subjects showed a marked increase of the CYT-c activity and concentration about 40 minutes after the end of the autohemotherapy, possibly revealing a reduction of the chronic oxidative stress level typical of MS sufferers. From a technical point of view, this preliminary study showed that NIRS could be useful to show the effects of ozone autohemotherapy at cerebral level, in a long-term monitoring. The clinical result of this study is the quantitative measurement of the CYT-c level changes in MS induced by ozone autohemotherapy.

Publication International Journal of Immunopathology and Pharmacology

Volume 27

Issue 3

Pages 379-389

Date 2014 Jul-Sep

Journal Abbr Int J Immunopathol Pharmacol

Language eng

ISSN 0394-6320

URL

Library Catalog NCBI PubMed

Extra PMID: 25280029