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Letter to the editor

Rectal insufflations are a valid way in ozonetherapy

Feedback on the article "Oxygen-Ozone Therapy is at a Cross-Road" Rev. Esp. Ozono. 1(1):74-86.

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To the editor: We read with great interest the manuscript entitled: "Oxygen-Ozone Therapy is at a Cross-Road" Rev. Esp. Ozono. 1(1):74-86.[1]

First, we noted that some of the criteria considered by the authors do not appear to fit with reality. In the section: *A few of the present methodologies are of doubtful value and may be dangerous or ineffective* it is mentioned that the reason why Cubans do not use major autoemotherapy is because: "[…] *every day they have to treat thousands of patients, it appears impossible to perform M-O3-AHT for lack of time and money"*. Authors should know that the

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Cuban health system is well recognized by international authorities. For instance: according to the World Health Organization, Cuba provides a doctor for every 170 residents, and has the first highest doctor-to-patient ratio in the world. Even under the difficult economic situation, the reason to use or ban a medical procedure in Cuba is not based on time or money, but on clinical effectiveness and low rate of side effects. Cuba is the only nation which has a specialized center for ozone research. This center provides the preclinical and clinical evidence to support the medical application of this therapy.

Secondly, with regard to the rectal insufflations the manuscript says: *"Firstly, the O_3 concentration is too high and during prolonged use may be mutagenic; secondly, this route, being so uncertain, should not be used in controlled clinical trials"*. Actually, the biological effect of O_3 by rectal insufflations has been demonstrated extensively either experimentally[2-4] or clinically.[5-9] Furthermore, preclinical studies demonstrated its low toxicity.[3,10] Nowadays, the current maximal dose used in Cuba for this procedure is 200 mL O_2/O_3 with the O_3 concentration of 40 µg/mL (O_3 dose: 8 mg). Prospective clinical trials include the adjustment of the doses according to the redox diagnostic and imply the application of weekly progressive doses of 3.75, 6 and 7 mg for patients with redox index[11] 1 and 2 (normal or medium); 2.0, 3.25, 4.5 and 7 mg for patients with redox index 3 (high) and no therapy for patients with redox index 4 (critical). The therapeutic effectiveness of ozone by the rectal way is not uncertain. Rectal insufflation is the most harmless technique (practically free of adverse effects) and the most economic way of dosing ozone. Genotoxicity of therapeutic ozone was particularly studied in Cuba. Ozone autohemotherapy was proved to be neither clastogenic nor inducer of sister chromatic exchanges in cultured human lymphocytes. Certainly, ozone being a potent oxidant, primary DNA damage is evident after its rectal application in rats not only in colorectal cells, but also in peripheral leukocytes. However, after 72 h from the last exposure a significant decrease of DNA damage was observed in both cell types, indicating an evident recovery of the DNA primary damage induced by the treatment.[10]

The largest clinical trial using O_3 rectal insufflations was done in Cuba, by Copello and Menendez[12] in patients with retinitis pigmentosa. They followed those patients who received O_3 therapy every 6 months, for 25 years and found a sustained maintenance of the visual capabilities with no side effects.[12] For such a chronic disease, where ozone therapy cycles have to be repeated for many years, the less invasive way of ozone administration is the rectal application. The use of repetitive cycles of autohemotherapy would produce blood vessel injury. In addition, mutagenic effect of ozone does not depend on the administration way. Major autohemotherapy also induces DNA damage in peripheral lymphocytes but, as during rectal application, the DNA repairing mechanisms can reverse this damage (Diaz-Llera *et al*. 2011 on submission).[13]

Thirdly, the comment referred to a clinical trial in diabetic foot patients: *"it seems that in only twenty days that dosage could cure (?) the diabetic foot in a number of patients treated with rectal ozone and topical ozonated oil"* and cited a clinical trial that appeared in Eur. J. Pharmacol., 2005.[6] The article properly reports improvement in blood glucose level, reduction in area and perimeter of the lesion, decrease in oxidative biomarkers, reduction in hospital stay and reduction in costs compared to traditional therapy. In the abstract it is textually written:
"[…] *the healing of the lesions improved, resulting in fewer amputations than in the control group".*

Since nobody in Cuba claims to be so prodigious as to cure a diabetic foot in only 20 days, the expression used appears not elegant to the scientific dignity of people working for many years, with only limited resources, yes, but certainly adhering to strict scientific standards. The work of colleagues all over the world must be respected and the recognized experience must be used to help and build and not to destroy.

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