

# The ozone therapy controversy and the need for science-based health policies in the Brazilian context

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Brazil has experienced official science denialism for four years, led by its former president Bolsonaro.<sup>1</sup> In the academic field, there was great hope for the President Lula's government to change this pattern.<sup>2</sup> However, this government shows signs that it has not realised how pernicious it can be not to align with scientific evidence in its decisions. On August 7, 2023, the Lula government released the use of ozone therapy, a treatment without any scientific proof, a pseudoscience,<sup>3</sup> reviving practices and speeches typical of the previous government. It would be very unfair to say that Lula would be following the path of his predecessor with his speeches preaching against social isolation in the middle of a pandemic, saying that COVID-19 vaccines would be causing AIDS or propagating the use of innocuous and dangerous drugs against COVID-19, among other daydreams, continuous and inconsequential. Lula is very far from this, but we must be alert because, in the Brazilian context, no ideology is immune to contradictions to good scientific practice.

The Brazilian government's decision to approve Ozone therapy is not supported by relevant research or any paper published in high-impact journals. It is claimed on the internet and social media that this therapy would treat a variety of ailments, from diabetes to respiratory problems to more difficult diseases such as multiple sclerosis, AIDS, and cancer,<sup>4</sup> a typical condition of an alternative treatment (an almost universal panacea) that incurs the risk of abandonment of conventional treatment by the unwary. In this perspective of an almost magical solution to so many illnesses (especially against COVID-19), ozone is applied on the surface of the skin and subcutaneously, in the mouth, and in more reckless ways, when the gas is applied in the rectum<sup>5</sup> and through homotherapy (in which blood is withdrawn, mixed with ozone and reintroduced into the individual),<sup>6</sup> all without any proven evidence of efficacy. For those who judge these practices as harmless, such as homeopathy (considering, of course, that the patient does not abandon conventional treatments), it is worth noting that there is evidence that this gas can irritate mucous membranes and would have the potential to cause bleeding,<sup>7</sup> among other potential risks<sup>8</sup>; research is needed to assess its possible safety. It is always

important to remember that ozone is a proven toxic gas when free.<sup>9</sup>

This kind of release and indication is not new in left-wing or so-called progressist, Brazilian governments. Lula's party (Workers' Party-PT) supported the release of a supposed miracle pill against cancer in Dilma Rousseff's government (phosphoethanolamine<sup>10</sup>), unbelievably proposed by none other than the Federal Deputy at the time, Jair Bolsonaro,<sup>11</sup> it is clear that this drug has never cured cancer and unfortunately many sick Brazilians have abandoned proven treatments because they trusted their rulers and their legislation. In addition, this denial of science is not new, in President Lula as in his first government (2003–2006), the Brazilian Unified Health System (SUS) accepted the use of so-called Integrative and Complementary Practices (ICPs),<sup>12</sup> suggestive name that encompasses proven techniques, but also beliefs without scientific evidence, such as “healing by touch”, aromatherapy, crenotherapy (indication and use of mineral waters for therapeutic purposes), among other “alternative practices”. It is important to reflect on how a pseudoscience such as ozone therapy can be complementary, complementary to what? If it is not an effective treatment, it would be important for this policy measure to explicitly indicate for which cases it would be complementary, as it leaves an open space for all kinds of charlatan practices.

Not even the Brazilian Federal Council of Medicine (CFM), which has supported many of Bolsonaro's erratic policies regarding the COVID-19 pandemic, such as medical freedom to prescribe ineffective and risk-taking drugs, endorsed the release of ozone therapy. The representative body of the Brazilian medical profession vaticinated: “ozone therapy is not valid for any disease” and is an “experimental procedure”, thus being emphatic in its disagreement with the Lula government. This perception of the CFM is corroborated by the US Food and Drug Administration (FDA), which considers ozone a toxic gas with no known medical application. Governments need to be guided in their health policies by solid scientific foundations to learn from their mistakes or those of others, whether left or right, in Brazil or anywhere in the world, so that they can face the pseudoscience that proliferates on social networks and the internet, and thus foster best medical practices and protect the population.

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Hesley Machado Silva has participated in all stages of the conception, drafting and finalization of this text.

## Declaration of interests

I declare no competing interests.

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