

LETTERS TO THE EDITOR

Tenofovir, an antiviral agent with low spermistatic activity

Tenofovir, agente antiviral con escasa actividad espermiostática

Dear Editor,

In July 2010, an interesting article¹ was published in the prestigious journal *Science*, which led to many comments in the media. The article informed on the results of a clinical trial (CAPRISA 004) carried out between 2007 and 2010 in the urban and rural areas of the KwaZulu-Natal province in South Africa, with a 1% tenofovir-based vaginal gel to prevent HIV infection. The study describes that the tenofovir-based vaginal gel reduces the probability of HIV infection by 39%, and that it had few side effects in the women that used it during the trial.

After reading this article and bearing in mind the experience of our group,^{2,3} the question arose as to whether in addition to preventing HIV infection, 1% tenofovir could also have spermicidal activity. This fact would be an advantage and give added value to its use as an antiviral. To explain this action, four semen samples obtained initially, a routine semen analysis was performed to check whether each sample complied with the minimum standards required to show some action of the medicine, i.e., whether it complied with the parameters of normality established by the World Health Organization (WHO) in 1999, such as >50% progressive motility and >70% viability. Subsequently, the sperm was incubated with a solution of tenofovir dissolved in a 0.85% saline solution (1% of the component) in a proportion of 1:1 for 5 minutes, and the effect on sperm motility was checked at: 20 seconds, 1, 2, 3, 4 and 5 minutes. According to the WHO, we describe sperm displacement as: a: >25 μm/sec, b: 5-25 μm/sec, c: <5 μm/sec and d: motionless.

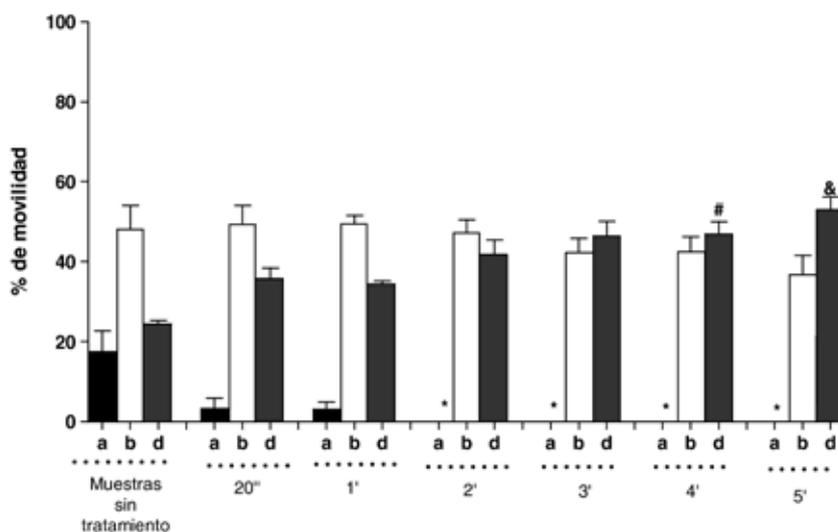


Figure 1 Effect of 1% Tenofovir on sperm motility. There are differences between motility a (*, p<0.05) and b (#, p<0.05; &, p<0.001), between control samples and samples treated in the periods indicated.

After 2 minutes of contact with 1% tenofovir, motility a underwent a significant decrease in relation to the control sample ($p < 0.05$) (fig. 1). In the case of motility b, no significant difference was observed with respect to the control sample in any of the treatment periods with the 1% tenofovir solution ($p > 0.05$), however, it was apparent that this type of motility was different in the sperm treated with the 1% tenofovir solution when compared to that which was not, as it was slower and the tail propulsion pattern and head movement were different; lastly, as regards motility d, there was a significant increase in comparison to the untreated sperm and that treated with 1% tenofovir in four-minute ($p < 0.05$) and five-minute periods ($p < 0.01$).

These results on the spermicidal activity of some molecules are encouraging, in the sense that they boost the search for spermicides that also have antiviral activity, particularly anti-HIV. According to preliminary observations, despite 1% tenofovir having a moderate sperm immobilising effect, it cannot be classified as a spermicide.

References

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