

Abstract

Pergafast 201 (N-(p-Toluenesulfonyl)-N'-(3-p-toluenesulfonyloxyphenyl)urea) is a patented color developer that is offered as an alternative to the widely used bisphenols A and S (BPA, BPS). These substances have been shown to have a negative effect on human health and reproduction even in very low doses, and they are endocrine disruptors affecting, among other things, the process of meiotic maturation. The effects of pergafast 201 on the mammalian organism during oogenesis have not yet been monitored. The aim of this work was to evaluate the effect of pergafast 201 on selected specific markers of meiotic maturation after exposure of porcine oocytes to pergafast 201 in low concentrations *in vitro*.

This work is the first to describe the negative effects of pergafast 201 on the maturation of porcine oocytes *in vitro*, confirming the negative effect of pergafast on the course of meiotic maturation and on the ability of the oocyte to reach the final stage of maturation, as well as its effect on the increased incidence of abnormal dividing spindles. The data show the effect of PF201 on the methylation of epigenetic markers H3K4me2 and H3K9me3. Preliminary results also indicate its effect on the mRNA expression of estrogen receptors α and β . Collectively, these results indicate the possible risks associated with the use of this substance as an alternative to bisphenols and the necessity of investigating its effect on not only the reproductive health of humans and animals.