

Abstract

Bisphenol A is a widely used chemical in the manufacture of plastics. The presence of BPA in the environment adversely affects human health due to contamination of air, drinking water and food. Growing concerns about the effects of BPA have led to its regulation in production and development of alternative chemicals to BPA, such as bisphenol S (BPS). However, the effects of BPS were not properly tested before its introduction to production and the effects on human reproduction are still unknown. For this reason, it is desirable to test the effect of BPS on mammalian oocyte development. This study hypothesizes that BPS exposure causes inhibition of meiotic maturation of porcine oocytes *in vitro*. This study aims to investigate the potency of BPS at low concentrations corresponding to normal human exposures to selected porcine oocyte proteins. The results of this study demonstrate the negative effect of BPS on the progression of meiotic maturation and reaching the mature oocyte stage. In addition, the results show an increase in the formation of defective meiotic spindles and a disruption of mitochondrial integrity after exposure to BPS concentrations. However, the effect of BPS on double-strand breaks was not demonstrated in this study, in contrast to the case of BPA. Taken together, the results show that BPS has similar or greater effects on the meiotic maturation of mammalian oocytes and is, therefore, an inappropriately chosen substitute for BPA.

Keywords: oocyte, meiotic maturation, bisphenol S, bisphenol A