

Abstract

Lysmeral (Lilial, Butylphenyl Methylpropional) is a synthetically produced aldehyde. It is used for its typical lily of the valley-like scent as a perfume ingredient in cosmetic products. It is typically found, for example, in cleaning products. It is on the list of the 26 most well-known synthetic allergens and has been shown to be present in human urine and subsequently in wastewater. According to some opinions, lysmeral should be classified as an endocrine disruptor, which are substances that can interfere with the body's endocrine system. As these substances often affect mammalian reproduction, it is in society's interest to address them, given that they are commonly found in the environment. Lysmeral was not properly tested before being placed on the market and all its effects on organisms are still unknown. The hypothesis of this thesis is that exposure to lysmeral causes undesirable changes in the meiotic maturation of porcine oocytes in vitro and the aim is to investigate the effect of lysmeral, at concentrations corresponding to normal human exposures, on specific markers of meiotic maturation of porcine oocytes. The results confirm the negative effect of lysmeral on the smooth progression of meiotic maturation and the achievement of the final stage of porcine oocyte maturation in vitro. The effect of lysmeral on the increased incidence of division spindle abnormalities and double-stranded DNA breaks was also demonstrated. The effect of lysmeral on histone H3K4me3 methylation was not demonstrated. Overall, our results highlight the potential risks associated with the use of this synthetic substance and call for a closer and more thorough investigation of its effects on organisms and animal reproduction, including humans.

Key words

oocyte, meiotic maturation, lysmeral, endocrine disruptor, pig