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Glyphosate and its most popular product (Roundup) affect the secretion of myometrial contractions regulators from bovine ovary and uterus *in vitro*

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Glyphosate based herbicides are intensively used in modern agriculture. Therefore, the aim of the study was to investigate the effect of the pure glyphosate and its most popular product (Roundup) on hormonal regulation of the force of myometrial contractions. The myometrial, endometrial, granulosa and luteal cells, as well as the strips of myometrium, from non-pregnant cows, were incubated with the herbicides at doses (0.1, 1 or 10 ng/ml) which were closed to their environmental amount. Neither glyphosate nor Roundup affected the viability of studied cells. Glyphosate stimulated the secretion of testosterone (T) and estradiol from granulosa cells, while Roundup inhibited the T secretion. Both compounds decreased the secretion of progesterone while increased oxytocin (OT) secretion from luteal cells. Roundup significantly decreased prostaglandins (PGF2 and PGE2) secretion from endometrial but not myometrial cells. However, neither basal nor OT-stimulated myometrial contractions were affected by both compounds. The data show that the herbicides impaired the secretory function of ovarian and endometrial cells. Admittedly both compounds change the amount of regulators of uterine contractions, but they do not affect the force of myometrial contractions directly. The data clearly show that these herbicides can support the luteolytic process but may only indicate the potential of these compounds to disturb the regulation of smooth muscle motility.

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Biography

Michał H Wróbel is currently an Associate Professor at the Institute of Animal Reproduction and Food Research of the Polish Academy of Sciences in Olsztyn (Poland). He earned his PhD in Faculty of Biology from the University of Warmia and Masury in Olsztyn, in 2008. In his thesis work he pioneered the adverse effect of chlorinated xenobiotics (polychlorinated biphenyls and pesticides) on bovine myometrial contractions. After completing his MSc, he worked as an Assistant Professor in the Department of Cattle Physiology and Endocrinology of the Institute of Animal Reproduction and Food Research, PAS. In 2009, he became an Associate Professor in the Department of Physiology and Toxicology of Reproduction of the Institute of Animal Reproduction and Food Research, PAS.

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