HYPOTHESIS ABOUT THE CYCLIC LABILITY OF PROOXIDANT-ANTIOXIDANT HOMEOSTASIS IN SOWS

S.A. Usenko, V.F. Kovalenko, A.M. Shostya, A.S. Siabro, I.V. Pavlova, I.V. Sarnavska
Poltava, Ukraine

POLTAVA STATE AGRARIAN UNIVERSITY

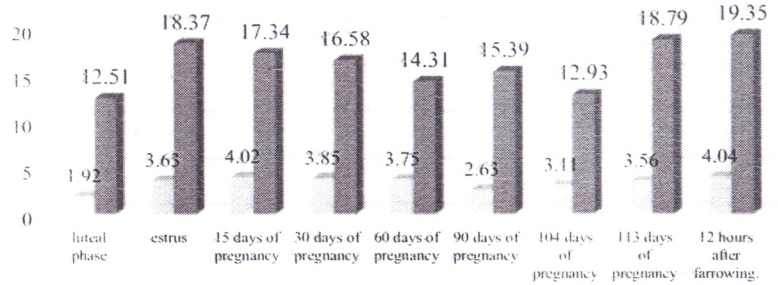
AIM OF RESEARCH. This study was conducted to determine the peculiarities of the formation of prooxidant-antioxidant homeostasis in cyclical and pregnancy gilts.

MATERIALS AND METHODS. In the experiment on the principle of analogues it was used pigs the Poltava Meaty breed, in which it has been carried out blood sampling at different periods of the reproduction cycle: luteal phase, estrus, at 15, 20, 30, 60, 90, 104, 113 days of pregnancy and 12 hours after farrowing.

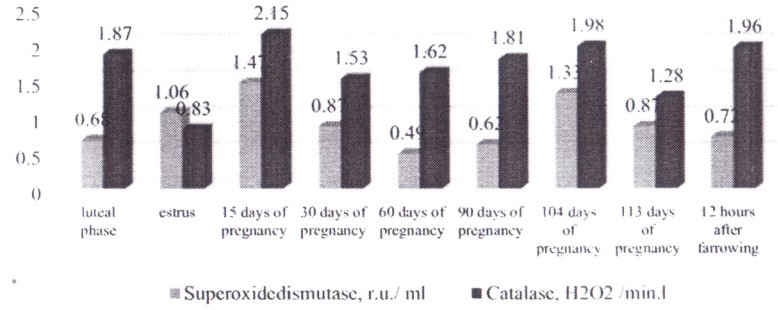
RESULTS. The results of studies show that in blood of pigs during the period of estrus the processes of peroxide oxidation slightly accelerate. During the implantation period (15-20 days of pregnancy) the intensity of peroxide oxidation reaches maximum values the activity of xanthine oxidase ($p < 0.05$) increases, the content of diene conjugates ($p < 0.05$) and TBA-active compounds ($p < 0.05$) increases. These changes are accompanied by an increase in the level of antioxidant protection - the activity of superoxide dismutase on 2.1 times ($p < 0.05$) and catalase on 1.3 times ($p < 0.05$), the amount of vitamin A on 1.6 times and vitamin E on 2 times. It was found the fact that in pigs before delivery, there was a shift of prooxidant-antioxidant homeostasis in the direction of peroxidation intensification, namely due to the increase of xanthine oxidase activity on 11.5% ($p < 0.05$). These changes are due to an increase in the concentration of diene conjugates and TBA-active compounds ($p < 0.05$) and a decrease in the content of low molecular weight antioxidants: reduced glutathione, vitamin A and E.

CONCLUSION. The obtained results allow us to formulate a hypothesis of cyclic lability of prooxidant-antioxidant homeostasis in blood of pigs, changes which are caused by phases of the reproductive cycle, namely, certain periodic fluctuations caused by changes in their physiological state, which are aimed at maintaining normal processes.

Intensity of peroxide oxidation processes in the blood of sows during the reproductive cycle



Antioxidant protection system in the blood of sows during the reproductive cycle



HYPOTHESIS ABOUT THE CYCLIC LABILITY OF PROOXIDANT-ANTIOXIDANT HOMEOSTASIS IN SOWS

S.A. Usenko, V.F. Kovalenko, A.M. Shostya, A.S. Siabro, I.V. Pavlova, I.V. Sarnavska

Poltava State Agrarian Academy, Poltava, Ukraine

This study was conducted to determine the peculiarities of the formation of prooxidant-antioxidant homeostasis in cyclical and pregnancy gilts. In the experiment on the principle of analogues it was used pigs the Poltava Meaty breed, in which it has been carried out blood sampling at different periods of the reproduction cycle: luteal phase, estrus, at 15, 20, 30, 60, 90, 104, 113 days of pregnancy and 12 hours after farrowing. The results of studies show that in blood of pigs during the period of estrus the processes of peroxide oxidation slightly accelerate. During the implantation period (15-20 days of pregnancy) the intensity of peroxide oxidation reaches maximum values the activity of xanthine oxidase ($p < 0.05$) increases, the content of diene conjugates ($p < 0.05$) and TBA-active compounds ($p < 0.05$) increases. These changes are accompanied by an increase in the level of antioxidant protection - the activity of superoxide dismutase on 2.1 times ($p < 0.05$) and catalase on 1.3 times ($p < 0.05$), the amount of vitamin A on 1.6 times and vitamin E on 2 times. It was found the fact that in pigs before delivery, there was a shift of prooxidant-antioxidant homeostasis in the direction of peroxidation intensification, namely due to the increase of xanthine oxidase activity on 11.5% ($p < 0.05$). These changes are due to an increase in the concentration of diene conjugates and TBA-active compounds ($p < 0.05$) and a decrease in the content of low molecular weight antioxidants: reduced glutathione, vitamin A and E. The obtained results allow us to formulate a hypothesis of cyclic lability of prooxidant-antioxidant homeostasis in blood of pigs, changes which are caused by phases of the reproductive cycle, namely, certain periodic fluctuations caused by changes in their physiological state, which are aimed at maintaining normal processes.

HYPOTHESIS ABOUT THE CYCLIC LABILITY OF PROOXIDANT-ANTIOXIDANT HOMEOSTASIS IN SOWS

S.A. Usenko, V.F. Kovalenko, A.M. Shostya, A.S. Siabro, I.V. Pavlova, I.V. Sarnavska

Poltava State Agrarian Academy, Poltava, Ukraine

This study was conducted to determine the peculiarities of the formation of prooxidant-antioxidant homeostasis in cyclical and pregnancy gilts. In the experiment on the principle of analogues it was used pigs the Poltava Meaty breed, in which it has been carried out blood sampling at different periods of the reproduction cycle: luteal phase, estrus, at 15, 20, 30, 60, 90, 104, 113 days of pregnancy and 12 hours after farrowing. The results of studies show that in blood of pigs during the period of estrus the processes of peroxide oxidation slightly accelerate. During the implantation period (15-20 days of pregnancy) the intensity of peroxide oxidation reaches maximum values the activity of xanthine oxidase ($p < 0.05$) increases, the content of diene conjugates ($p < 0.05$) and TBA-active compounds ($p < 0.05$) increases. These changes are accompanied by an increase in the level of antioxidant protection - the activity of superoxide dismutase on 2.1 times ($p < 0.05$) and catalase on 1.3 times ($p < 0.05$), the amount of vitamin A on 1.6 times and vitamin E on 2 times. It was found the fact that in pigs before delivery, there was a shift of prooxidant-antioxidant homeostasis in the direction of peroxidation intensification, namely due to the increase of xanthine oxidase activity on 11.5% ($p < 0.05$). These changes are due to an increase in the concentration of diene conjugates and TBA-active compounds ($p < 0.05$) and a decrease in the content of low molecular weight antioxidants: reduced glutathione, vitamin A and E. The obtained results allow us to formulate a hypothesis of cyclic lability of prooxidant-antioxidant homeostasis in blood of pigs, changes which are caused by phases of the reproductive cycle, namely, certain periodic fluctuations caused by changes in their physiological state, which are aimed at maintaining normal processes.

Гіпотеза про циклічнулабільністьпрооксидантно-антиоксидантного гомеостазу у свиноматок

S. A. Usenko, V.F. Kovalenko, A. M. Shostya, A.S Siabro, E. V. Chukhleb,

Poltava State Agrarian Academy, Poltava, Ukraine

Це дослідження було проведено з метою встановлення особливостей формування прооксидантно-антиоксидантного гомеостазу у циклюючих та поросних свинок. У експерименті за принципом аналогів використано свинок полтавської м'ясної породи, у яких проводили забір крові у різні періоди відтворювального циклу: лютеальна фаза, еструс, на 15, 20, 30, 60, 90, 104, 113 доби вагітності та через 12 годин після опоросу. Результати досліджень свідчать, що в крові свинок у період еструсу незначно прискорюються процеси пероксидного окиснення. В період імплантації (15-20 доби поросності) інтенсивність пероксидного окиснення досягає максимальних значень: зростає активність ксантиноксидази ($p<0,05$), підвищується вміст дієновихкон'югатів ($p<0,05$) та ТБК-активних сполук ($p<0,05$). Ці зміни супроводжуються зростанням рівня антиоксидантного захисту – активності супероксиддисмутази у 2,1 рази ($p<0,05$) і каталази у 1,3 рази ($p<0,05$) кількості вітаміну А у 1,6 рази та вітаміну Е у 2 рази. З'ясовано, що у свинок перед пологами спостерігалось зміщення прооксидантно-антиоксидантного гомеостазу в напрямі інтенсифікації пероксидації, а саме за рахунок збільшення активності ксантиноксидази на 11,5% ($p<0,05$), . Ці зміни відбуваються на тлі збільшення концентрації дієновихкон'югатів та ТБК-

активних комплексів ($p<0,05$), та зниження вмісту низькомолекулярних антиоксидантів: відновленого глутатіону, вітаміну А і Е. Отримані результати досліджень дозволяють сформувати гіпотезу про циклічну лабільність прооксидантно-антиоксидантного гомеостазу у крові свинок, зміни якого зумовлені фазами відтворювального циклу, а саме певними періодичними коливаннями, що викликані зміною їх фізіологічного стану, які спрямовані на підтримання фізіологічної норми перебігу процесів пероксидації.

	of young beef cattle in postnatal ontogenesis (1181)	
85	Ghrelin infusion attenuates gonadotropin secretion in ewes (1187)	E, Dovolou
86	Comparison of selected biological properties and antioxidative status of turkey (Meleagris gallopavo) spermatozoa derived from white and yellow semen. (1188)	M, Koziorowska-Gilun
87	Productive and reproductive health of pigs in the use of fir triterpenic acids (1190)	A, Filatov
88	Azoksivet as a means of prevention of postpartum diseases of cows and for improvement of the viability of their offspring (1192)	A, Sapozhnikov
89	Rooibos (Aspalathus linearis) extract reduces lipid peroxidation and protects plasma membrane integrity in boar sperm under oxidative stress (1195)	J, Ros-Santaella
90	Dairy cows blood cytokine profile during the postpartum period (1196)	A, Lisenko
91	Anti-Mullerian hormone in dairy cows' blood during postpartum period at varying functional ovarian state (1197)	A, Nezhdanov
92	Enzymes in diagnostics and forecasting obstetric pathology in dairy cows (1199)	I, Ventsova
93	Precision betacarotene supplementation enhanced ovarian outcomes without changes in the LH pattern release in yearling crossbred anestrous goats (1200)	C, Meza-Herrera
94	SNP LEP (Leptin) effect on the body growth and development of young meat cattle (1201)	L, Kalashnikova
95	Fertility characteristics of phenotypically thermotolerant dairy cows (1202)	I, Nanas
96	Effects of long-term Ghrelin administration on metabolism and estrous characteristics in sheep (1203)	L, Oikonomopoulou
97	Delayed cyclicity, fatty acid profile of milk, and IGF-1 in Holstein and Swedish Red dairy cows (1206)	R, Båge
98	Relationship between boar semen quality and its collection frequency (1207)	A, Tadzhieva
99	The efficiency of treatment of endometritis in cows with the use of ozonated Flaxseed oil (1208)	S, Nikolaev
100	Effect of cryopreservation on the sperm characteristics and DNA integrity of European red deer (Cervus elaphus elaphus) epididymal spermatozoa (1210)	A, Dziekońska
101	Influence of ozonated Flaxseed oil on the timing of fertilization of cows (1211)	I, Konopeltsev
102	The effects of the vitamin-mineral drug "Antimiopatik" use in cows during the dry period on the oxidant-antioxidant status of newborn calves (1212)	A, Chernitskiy
103	Fertility of crossbred Kholmogory cattle with the Holstein breed (1214)	S, Kopylov
104	Promising loci and genes for cryoresistance of spermatozoa identified by a Genome-Wide Association Study in horses (1217)	A, Krutikova
105	The comparative assessment of Holstein heifers prolificacy during the fertilization with a sexed or ordinary semen (1219)	A, Kalashnikov
106	Stearoyl-CoA desaturase gene polymorphism in Holstein cows due to blood biochemical profile in the first two months of lactation and reproductive ability (1222)	V, Leibova

107	The relationship of testosterone level and season in beluga whales (Delphinapterus leucas) (1223)	A, Musidray
108	Analysis of BAX and BCL2 protein expression by Flow Cytometry during the follicular development in canines (1224)	M, De los Reyes
109	Quantitative ecogenicity of fetal placental tissue in brachycephalic bitches (1226)	A, Rodrigues Simões
110	Effect of P4+GnRH synchronizing based protocols upon follicular growth in adult goats during the breeding season (1227)	G, Arellano-Rodriguez
111	Successful vitrification of hybrid (Bos taurus ♀ x Bison bonasus ♂) embryos (1228)	A, Duszewska
112	The impact of environmental factors on the immunohematological parameters of pregnant cows (1229)	O, Oparina
113	Polymerase chain reaction in diagnostics of latent and persistent forms of infectious cattle diseases (1231)	N, Bezborodova
114	Hypothesis about the cyclic lability of prooxidant-antioxidant homeostasis in sows (1233)	A, Siabro
115	The effect of injection of recombinant bovine interferon-tau on hormonal and cytokine status indicators and the performance of insemination of cows (1234)	V, Mikhalev
116	Proinflammatory cytokines in the blood of cows during the early period of gestation (1235)	S, Shabunin
117	Proinflammatory cytokines in the blood of cows with mastitis (1236)	V, Gritsyuk
118	Morphological features of polymycotoxicosis in the cattle mother-fetus system (1237)	A, Belousov
119	Comparative evaluation of amino acid composition of colostrum from BLV-infected and seronegative cows (1239)	M, Petropavlovskiy
120	Features of transplacental transfer of heavy metals in cattle (1241)	I, Shkuratova
121	Runs of Homozygosity (ROH) in the genome affecting the reproduction in small chicken populations (1243)	N, Dementieva
122	Microorganisms in raw milk from cows with subclinical mastitis (1247)	M, Isakova
123	Influence of certain components and the activity of seminal plasma enzymes on the progressive sperm motility after thawing in stallions (1249)	M, Atroshchenko
124	Sampling of genetic material in marmot (Marmota bobak Müll., 1776) males (1252)	I, Plotnikov
125	Probiotic suplementation modifies the expression of key genes in the Zebrafish dopaminergic pathway (1253)	V, Robles
126	Modification of surgical treatment of congenital rectovaginal fistula with imperforate anus in a dog- a case report (1254)	M, Galanty
127	The effect of maltose in medium for cryopreservation rooster's semen on its survival in the genital tract of hen (1255)	A, Kurochkin
128	Detection of fetal anasarca by ultrasound examination as an indication for C-section, a case report (1256)	B, Degorska
129	An innovation based on artificial neural network (ann) enhances senegalese sole production (1257)	D, G. Valcarce
130	Concentration of macro-elements in the seminal plasma of stallions (1258)	V, Kalashnikov
131	Reproductive ability of cows at different housing systems (1259)	E, Ivanov