

SUPEROXIDE DISMUTASE ISOFORMS IN TISSUES OF REPRODUCTIVE ORGANS IN BULLS

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The content of AFO is optimally supported by the antioxidant system. In it superoxide dismutase (SOD) plays the key role. In the reproductive organs of males the enzyme exists in three genetically predisposed forms — mitochondrial, cytosolic and extracellular. Therefore, it is important not only to state the changes in the activity of SOD, but also the redistribution of enzyme isoforms, when studying spermiogenesis and after ejaculation.

The aim is to investigate the content of SOD isoforms in the tissues of the reproductive system of the bulls.

Tissues of the testicles and epididymis, which were taken after the slaughter of the bulls (n=5) were used. Epididymium spermatozoa were washed with 0.9 % NaCl solution. Tissues were homogenized at 4 °C in 0.25M sucrose at 6000 rpm within 2 minutes. Homogenate was centrifuged for 15 min at 8000 rpm, supernatant was taken for study of enzyme isoforms. SOD isoforms were detected after electrophoresis in 10 % polyacrylamide gel by staining gel plates using Beauchamp and Fridovich method in our modification. Content of isozymes was calculated using *TotalLab TL120* program.

Five isoforms of SOD were detected in testicle tissues, epididymis and in spermatozoa. In testicle tissue isoform distribution was: 2.4–2.8 % S1 and S2 isoforms, 23.6–24.6 % S3 and S5, and 46.6±0.9 % S4 isoforms. In epididymis head 10.4±0.4 and 58.3±1.7 %, correspondingly, S1 and S4 isoforms, on 3.3 % and 12.6 % (P <0.001) lower in body and 5.6±0.6 and 43.2±0.6 % in tail. Content S3 and S5 isoforms in epididymis head, respectively, 12.4±3.5 and 6.2±1.3 %, in body — 1.2 and 15.1 % (P <0.001) higher and in tail — 17.0±0.2 and 22.2±2.6 %. The content of S2 isoform in epididymis head was 12.6±0.3% and remains at same level in tissues of body and tail.

Content of SOD isoforms in epididymal sperm depends on localization in morphological parts of the epididymis. S1 isoform content in spermatozoa of epididymis head was 18.4±1.5 %, increased to 29.1±3.0 % in spermatozoa from body and tail. S2 isoform content in spermatozoa with change in morphological part: head → body → tail of epididymis increases from 19.6±1.6% to 6.7 and 14.7 % (P <0.05), respectively. S3 isoform content was high (14.7±1.6 %) in body of epididymis, lower by 5.1 % in tail and the lowest (4.5±0.6 %) in head. S4 isoform content in spermatozoa is reduced with a change in part of epididymis: head → body → tail with 52.3±5.6 %, 29.5 % (P <0.001) and 30.5 % (P <0.01), respectively. S5 isoform content was low (5.2–5.9%) in sperm from head and tail and on 1.9 % higher in epididymis body.

There are 5 isoforms of SOD in tissues of testicles and epididymis and in spermatozoa. In tissues of bull testicles, activity of SOD is mainly realized by S3, S4 and S5 isoforms, in epididymis by S2, S3, S4 and S5, and in sperm from epididymis: heads — S1, S2 and S5, bodies — S1, S2, S3 and S4 and in tails S1, S2 and S4.

Keywords: SUPEROXIDE DISMUTASE, ISOFORMS, REPRODUCTIVE ORGANS, SPERMATOZOA, BULLS, ELECTROPHORESIS