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High catalase content of rabbit semen appears to be inherited

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Reactive oxygen species, as hydrogen peroxide, can be damaging to sperm. Most species have little protective catalase in their semen, but rabbit semen contains substantial amounts of catalase. The objective of the present study was to characterize a substantial number of Dutch rabbits for seminal content of catalase and determine whether differences were inherited. Usually, 4 or more semen samples were analyzed per male. Catalase was measured by a gasometric procedure. In Experiment 1, the correlation between duplicate determinations was $r = .99$, and between 2 sets of semen samples from 55 males it was $r = .95$. There was a significant difference ($P < .05$) among pairs of males from 6 litters. In Experiment 2, semen from each of 11 males collected at an interval of 1 year contained an average of 13 and 12 units of catalase per mL of semen in consecutive years. The correlation between pairs of samples was $r = .85$. This indicated that the condition was permanent, and possibly genetically controlled. Experiment 3 analyzed the catalase content of semen from 7 sires and 32 sons. The heritability of seminal catalase concentration was 0.48. These studies indicate that rabbit seminal plasma is high in catalase, and that a substantial portion of the differences among males are under genetic control.

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