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## JOURNAL ARTICLE

# Relationship of semen quality, number of sperm inseminated, and fertility in rabbits

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The relationship between the total number of sperm inseminated, semen quality, and fertility in rabbits was investigated, using fractionated or unfractionated semen and different diluting fluids. Semen was from Dutch-belted males collected twice weekly with an artificial vagina. All does were superovulated except in Experiment 3. In Experiment 1, sperm were fractionated on discontinuous 4% and 10% bovine serum albumin columns. Sperm from each portion of the gradient, along with unfractionated controls, were diluted to give  $0.25 \times 10^6$ ,  $0.5 \times 10^6$ ,  $1.0 \times 10^6$ , and  $2.0 \times 10^6$  total sperm per insemination. In Experiment 2, sperm were diluted with Dulbecco's phosphate-buffered saline to provide  $0.10 \times 10^6$ ,  $0.50 \times 10^6$ , and  $1.0 \times 10^6$  total sperm per insemination, with minimal processing time. In Experiment 3, does were allowed to kindle after inseminating  $0.1 \times 10^6$  or  $1.0 \times 10^6$  sperm. In Experiment 4, sperm were diluted with TALP buffer: seminal plasma 1:1 to  $0.025 \times 10^6$ ,  $0.05 \times 10^6$ , and  $0.10 \times 10^6$  total sperm per insemination. Over 2,800 embryos or unfertilized oocytes were obtained either 24 or 48 hours after insemination to measure fertility. Sperm numbers required for normal fertility were  $0.50 \times 10^6$  in Experiment 1 and only  $0.05 \times 10^6$  in Experiment 4. This reduction presumably was due primarily to reduced processing time and diluent change. Litter size was normal with  $0.1 \times 10^6$  sperm (Experiment 3). In Experiment 4, computer-assisted sperm analysis (HTM 2030 system; Beverly, Massachusetts) was adapted to successfully screen out some of the "interfering" granules in rabbit semen. (ABSTRACT TRUNCATED AT 250 WORDS)

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