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Porcine Zona Pellucida vaccine (ZonaCon) as an immunocontraceptive in deer

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Abstract: Research on a PZP contraceptive vaccine was performed at 2 sites; Penn State University and Seneca Army Depot in upper New York. The Penn State study included immune response, hormone analysis, fawning and behavioral analysis. The Seneca depot studied behavioral and fawning response in a semi-free ranging setting. At Penn State University, in a 7 year study, does were actively immunized for two years resulting in a 90% reduction in fawns. They were followed for 5 more years to determine if the effect was reversible. The reduction in fawning over the 7 years was 72%. Most deer returned to fertility with a single fawn common as the antibody titer dropped. In a two year study at Seneca depot, the deer were vaccinated by darting after coming to a bait station. The reduction in fawning over the two years was 91 %, and the number of does giving birth decreased 86%. The effects of PZP immunization depend on the magnitude of the immune response. During active immunization, ovulation is prevented (low progesterone levels). A lower immune response allows ovulation, but sufficient antibody is available to block sperm penetration of the oocyte. When antibody levels are insufficient to block sperm binding, reproduction rates return to normal.

Key words: immunocontraceptive, Porcine Zona, white-tailed deer