Induction of the ovulatory LH surge in Asian elephants (Elephas maximus): a novel aid in captive breeding management of an endangered species.

Reproduction, Fertility and Development 2009, 21, 672–678

Authors

A Faculty of Veterinary Medicine, Chiang Mai University, Chiang Mai, 50100, Thailand.
B Faculty of Veterinary Medicine, Utrecht University, Marburglaan 2, 3584 CN, Utrecht, The Netherlands.
C Thai Elephant Conservation Center, National Elephant Institute, Forest Industry Organisation, Lampang, 52190, Thailand.
D Conservation and Research Center, National Zoological Park, Smithsonian Institution, Front Royal, Virginia 22630, USA.

Abstract
A unique feature of the reproductive physiology of Asian elephants (Elephas maximus) is the occurrence of two LH surges before ovulation, instead of one. An anovulatory LH (anLH) surge, the function of which is unknown, occurs consistently 3 weeks before the ovulatory LH (ovLH) surge that induces ovulation. Thus, the ability to induce an ovLH surge would be useful for scheduling natural mating or artificial insemination. The present study tested the efficacy of a gonadotrophin-releasing hormone agonist (GnRH-Ag) to induce LH surges during the follicular phase of the oestrous cycle, which resulted in varied LH responses, but generally none were as high as previously documented natural surges. Thus, for the ovulation-induction trials, nine females were administered 80µg GnRH-Ag intravenously at three time periods during the oestrous cycle, namely the anovulatory follicular phase, the ovulatory follicular phase and the luteal phase. During the late anovulatory follicular phase, nine of 10 females (90%) responded with an immediate LH surge followed 15–22 days later by an ovLH surge or a post-ovulatory increase in progestagens. In contrast, despite responding to the GnRH-Ag with an immediate increase in LH, none of the females treated during other periods of the oestrous cycle exhibited subsequent ovLH surges. One cow got pregnant from natural mating following the induced ovLH surge. In conclusion, ovLH induction is possible using a GnRH-Ag, but only during a specific time of the anovulatory follicular phase.

Keywords
gonadotropin-releasing hormone; ovulation induction.

Links
http://www.scopus.com/inward/record.url?eid=2-s2.0-67649695568&partnerID=40&md5=8652172b63105ea14b2591b27346455
http://cmuir.cmu.ac.th/handle/6653943832/7489