Chapter 6

6.0 GENERAL DISCUSSION

The high demand for goat meat and their products in Malaysia has forced the Malaysian government to take a major action to increase goat population in Malaysia to meet the self-sufficiency and possible export. In order to achieve this, the Malaysian government needs to change the goat production system to become commercial entity. Superior breeds are needed which are resistant to diseases, well adapted to Malaysian environment and more importantly goats that produce more milk and better meat quality compared with local goats, Katjang. In 1990, a synthetic goat breed, Jermasia, was produced by the University of Malaya through a joint-venture research between the University of Malaya and the Technical University in Berlin, Germany started in 1981. Boer crossbred goats are getting popular in Malaysia. This genotype has a bigger size than local Katjang, thus produce more meat and can produce more milk. There has been an effort to promote Jermasia goat as one of the commercial goat breeds. But high demand for the new genotype goats in a huge number and within a short period of time could not be fulfilled due to the low number of Jermasia and Boer crossbred goats in Malaysia. To produce the huge number of goats in a very short time, it needs advanced reproductive biotechnologies such as AI, in vitro fertilization, embryo transfer and cloning. But the success rate of animals undergoing these advanced reproductive technologies is still very low. It could be due to many factors. One of the reasons may be resulted from unsynchronous interactions between

the reproductive hormones. Currently, limited information is available on the endocrine aspects of reproduction in Jermasia and Boer crossbred goats. Therefore, studies were conducted to characterize the patterns of hormone secretions that control the female goats oestrous cycle and normal and abnormal oestrous cycles. It was observed that Jermasia goats had the highest percentage (90%) among the breeds with normal oestrous cycle followed by Katjang goats (60%) and Boer crossbred goats (30%). Therefore, reproductively the Jermasia goats were apparently well adapted to the Malaysian environment compared with the Boer crossbred goats. From a total of 25 goats studied, only 40% of the animals showed abnormal oestrous cycle. Long oestrous cycle comprised of five goats (20%). Four goats (40%) and only one goat (20%) from Boer crossbred goats and Katjang goat, respectively, showing long oestrous cycle and only one goat (40%) had short oestrous cycle, that is the Boer crossbred goat. . A total of 16% of the goats did not show the sign of oestrus. This was 10% of the Jermasia goats and 20% of the Katjang goats and Boer crossbred goats. All the animals with normal oestrous cycle showed the classical hormone pattern whereas abnormal oestrous cycle observed in the female animal was determined by the length of the dioestrus period or it may be as a result of unsynchronous interactions between the reproductive hormones. To determine the duration between the oestradiol peak and the detection of oestrus, further study was conducted and it was observed that the period between the oestradiol peak and the detection of oestrus was approximately 24 hours in Jermasia goats. This study was important because

the time of ovulation could be detected. Normal ovulation occurred 18 to 24 hours later, after the onset of oestrus. This will allow for efficient application of reproductive technologies such as AI, in vitro fertilization, embryo transfer and cloning in goats thus increased the success rate. Anoestrus animals cause a major problems in reproduction. In an attempt to overcome these problems, several implants used for oestrus synchronization were used to synchronized follicle development, CL regression and induction of ovulation. It was reported that treatment with redesignated intravaginal progesterone, stimulated fertile oestrus and resulted in prolificacy in anoestrus animals (Knights *et al.,* 2000). It was observed that progesterone levels started to rise immediately after implantation and then the levels were maintained throughout the whole experiment until the CIDR was removed from the animals. The high level of progesterone prevented the release of FSH and inhibited the growth of ovarian follicles, thus, preventing oestrus and ovulation in the treated animals. When the CIDR implant was removed, low level of progesterone hormone stimulated the growth of ovarian follicles until it became mature follicles and ovulation occurred. All the animals used in this study showed the sign of oestrus 24 hours to 72 hours after the removal of the CIDR implant. And from there it can be predicted that ovulation would happened 18 to 24 hours. It would allow us to timed the insemination procedure of all animals involved.

It is hoped that the results obtained from these studies will increase the understanding of the mechanism of hormonal control in reproduction of goats, thus enabling us to overcome many problems related to abnormal reproductive

status in goats. Also, it may increase the success rate of animals undergoing advanced reproductive technology, such as AI, in vitro fertilization, embryo transfer and cloning. Due to limited information on the endocrine aspects of reproduction in goats, more research should be done in this area. Since reproduction in female animals is controlled not only by steroid hormones such as progesterone and oestradiol but also other types of reproductive hormones such as LH and FSH, should also be studied. Consequentlly, overall pictures of hormonal control of reproduction in female animals can be elucidated and subsequently, the major problems in reproduction could possibly be overcome.