Hormonal treatments for the synchronisation of oestrus in dairy goats raised in the tropics

V. J. F. Freitas\textsuperscript{A, B}, D. Rondina\textsuperscript{A}, E. S. Lopes Júnior\textsuperscript{A}, D. I. A. Teixeira\textsuperscript{A} and N. R. O. Paula\textsuperscript{A}

\textsuperscript{A}Laboratory of Physiology and Control of Reproduction, State University of Ceará, Faculty of Veterinary, Fortaleza-CE, 60740-000, Brazil.

\textsuperscript{B}To whom correspondence should be addressed. email: vjff@uuce.br

Abstract. In tropical areas, local goats are often reported as being able to reproduce throughout the year, whereas an influence of season is found to be a factor when importing different dairy breeds. In these areas, oestrus synchronisation in goats is of interest for both technical (synchronisation of kidding, adjustment to forage availability or to continuous milk supply) and genetic reasons (dissemination of improved genotypes by AI). The use of a prostegagen vaginal sponge combined with equine chorionic gonadotrophin (eCG)-cloprostenol injections remains an efficient tool to achieve synchronisation in temperate and tropical zones. However, the oestrus synchronisation treatments currently used for goats in tropical regions were originally developed for goats bred in temperate regions. For this reason, several alternative possibilities for improving the efficiency of the hormonal treatment are evaluated. Oestrus synchronisation with luteolytic agents is efficient (resulting in more than 70% of goats in oestrus) and it takes into account female cyclicity. In developing regions of the tropics, the use of buck teasing appears to be a promising approach to control oestrus and ovulation. The use of this technique provides 60% of females in oestrus within 5 days of introducing the bucks. Considering the availability of nutrients as the ultimate regulator of reproduction in the tropics, the control of nutritional condition is essential before the use of hormonal treatments for oestrus synchronisation in goats bred in these regions takes place.

Extra keyword: fertility.

Introduction

Goats are numerous and are important from a social and economical point of view in most tropical areas. They are found in diverse ecological zones and all types of agricultural systems. These animals are very suitable to increase the general rate of animal production in these areas.

The increase in the human population, especially in ‘developing tropical regions’, has resulted in a corresponding increase in demand for food, including milk and milk products. In these areas with ~95% of the total goat population (Knights and Garcia 1997), this increased demand could be best made up from goat milk. The importance of goats as providers of dairy products has been discussed in many recent conferences and this importance is also reflected in the largest increase in goat milk production tonnage compared with other mammalian farm animals (FAO 2001).

In temperate latitudes, local goats are considered as short-day breeders because their breeding season starts during the decreasing daylength of summer and autumn. In these regions, variation in sexual activity is responsible for irregular milk production during the year. Thus, hormonal treatments are used to control the kidding season for production of milk with a high economic value and synchronise oestrus for facilitating an AI routine.

In tropical zones, where there is less variation in daylength, native goats tend to breed throughout the year. However, in order to improve productivity of goat herds, especially for milk production, farmers have used imported goats such as Alpine, Saanen and Anglo-Nubian, which are maintained in genetic purity or used for cross-breeding with local breeds. This procedure resulted in a different reproductive behaviour pattern, which was essentially seasonally polyoestrous (Lopes Júnior et al. 2001; Cruz et al. 2003). Therefore, some protocols for oestrous synchronisation cannot be used if goats are not cycling.

The objectives of this review are: (1) to make a brief description about the seasonality of oestrus in goats and their behaviour when raised in the tropics; (2) to revise the protocols used for oestrus synchronisation as well as the modifications performed to increase its efficiency; (3) to describe the use of oestrus synchronisation in the tropics; and (4) to relate the nutritional factors influencing the success of oestrus synchronisation.