04 /0059/33

นิพนธ์ต้นฉบับ

Project of investigation on infertile dairy cattle at Dairy Farm Promotion Organization (DFPO), Muak-Lek*
2. Preliminary report on infertile dairy cattle used for induction of lactation.

โครงการศึกษาโคนมที่มีปัญหาการผสมพันธุ์ ที่องค์การส่งเสริมกิจการโคนมแห่งประเทศไทย (อสค.) มวกเหล็ก
2. โคผสมไม่ติดซึ่งใช้ในการกระตุ้นการสร้างน้ำนม

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บทคัดย่อ : พีระศักดิ์ จันทร์ประทีป, ดำรง ลีนานุรักษ์, ชัยณรงค์ โลหชิต, สมสวัสดิ์ ตันตระกุล, และ อัจฉริยา กาญจนเทพ. 2533. โครงการศึกษาโคนมที่มีปัญหาการผสมพันธุ์ ที่องค์การส่งเสริมกิจการโคนมแห่งประเทศไทย (อสค.) มวกเหล็ก. 2. โคผสมไม่ติดซึ่งใช้ในการกระตุ้นการสร้างน้ำนม. วารสารวิจัยวิทยาศาสตร์การแพทย์ 4 (2) : 127-134

โคนมพันธุ์ผสมของ อสค. มวกเหล็ก ที่มีปัญหาเกี่ยวกับการผสมไม่ติดและนำมาใช้ในการศึกษาเพื่อกระตุ้นการสร้างน้ำนมจำนวน 21 ตัว เป็นโคสาว 11 ตัว และโคนาง 10 ตัว มีประวัติการผสมเทียมหลายครั้งแล้วแต่ไม่ติด ตั้งแต่เดือนเมษายน 2526 ทำการตรวจอวัยวะสืบพันธุ์ โดยการล้วงตรวจทางทวารหนักรวม 6 ครั้ง สังเกตปากมดลูกและช่องคลอด โดยใช้เครื่องตรวจดูภายในเดือนละครั้ง รวม 3 ครั้ง หนึ่งเดือนหลังจากเริ่มรีดนม เมื่อโคเป็นสัดให้ทำการผสมเทียม ตั้งแต่เดือนตุลาคม เมื่อโคยังผสมไม่ติด คัดออกและส่งโรงฆ่า เก็บอวัยวะเพศมาศึกษาทั้งทางมหภาคและจุลพยาธิ

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ผลการศึกษาครั้งนี้ชี้ให้เห็นว่า โคที่มีปัญหาเรื่องการผสมไม่ติด สามารถวินิจฉัยโดยการล้วงตรวจทางทวารหนักและยืนยันโดยการศึกษาทางมหและจุลกายวิภาค และพบว่ามีสาเหตุหลายประการด้วยกัน ได้แก่ persistent of Mullerian ducts, cystic corpus luteum, follicular cyst, endometritis, pyometra, mucometra ตลอดจนการติดเชื้อ

คำสำคัญ : โคนมผสมไม่ติด, กระตุ้นการสร้างน้ำนม

***Abstract* : Peerasak Chantaraprateep, Damrong Leenanuraksa, Chainarong Lohachit, Somsawas Tantrakul, and Achariya Kanchanadep. 1990. Project of investigation on infertile dairy cattle at Dairy Farm Promotion Organization (DFPO), Muak-Lek. 2. Preliminary report on infertile dairy cattle used for induction of lactation. Thai J Hlth Resch 4 (2) : 127-134**

Twenty one infertile crossbred cattle (11 heifers and 10 cows) belonged to DFPO, Muak-Lek, were investigated. Since April 1983, examination of genital organs per rectum and using endoscope for cervical inspection were carried out monthly for 6 and 3 times respectively. The animals which were not conceived from October were culled and slaughtered, genital organs were collected and examined. The findings indicated that there were 3 major causes of infertility in this study, namely, anatomical defects (persistent of Mullerian ducts), hormonal dysfunction (cystic corpus luteum, follicular cyst, endometritis, pyometra, mucometra), and infection.

Key words : *Dairying, infertile cow ; Induction; Lactation*

INTRODUCTION

Infertility is one of the great economic loss in dairy cattle farming. The causes of infertility are numerous and several factors are involved. They may be of congenital or acquired origin and temporary or permanent. The causes may be due to defects of the male or female as well as mismanagement at the breeding time. The present study is aimed to investigate the possible cause of infertility in the female at DFPO, Muak-Lek during the year 1983.

MATERIALS AND METHODS

Animals

A total of 21 infertile crossbred cattle, 11 heifers aged between 3 and 10 years (one of 3, four of between 3 and 5, four of between 6 and 9, and two of over 9 years old), and 10 cows aged between 5 and 10 years old were used (one of 5, three of between 6 and 9, and six of over 9 years old) for this investigation. They were classified as infertile animals with previous breeding records of more than 7 inseminations without conceive. They were grouped together and subjected to hormonal induction of lactation (Leenanuraksa *et al.*, 1984).

Methods

Examination per rectum of the genital organs and inspection of the cervix by endoscope were carried out monthly beginning from April 1983 for 6 and 3 times respectively (Chantaraprateep *et al.*, 1983). One month after the experiment, animals which came in heat were inseminated and pregnancy diagnosis was performed systematically 2 months after the insemination. Animals which failed to conceive during May to October, 1983 were culled and slaughtered. Genital organs were collected and proceeded for further studies. Analysis of the findings were carried out at the end of the studied period.

RESULT

Of the total 21 animals, examination of the genital organ per rectum and endoscope revealed seven normal finding (2 cows and 5 heifers), six purulent vaginal discharge as shown in figure 1 (4 cows and 2 heifers), three cystic ovaries (2 cows and 1 heifer), two cystic corpora lutea (1 cow and 1 heifer), one luteal cyst, one mucometra, and one bilateral uterine hypoplasia.

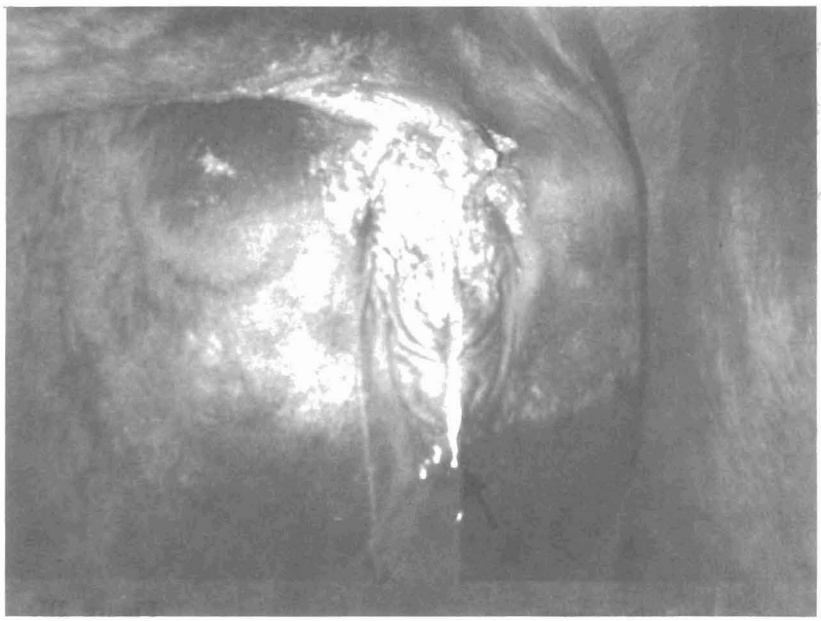


Figure 1. A cow with purulent vaginal discharge (arrow).

Only 10 genital organs out of the total 21 cows were confirmed histopathologically. The findings are listed below.

1. Four normal animals revealed normal finding of the uterus with corpus lutea and growing follicles or ovulated follicle.

2. Two cases of purulent vaginal discharge, the findings revealed chronic endometritis with persistent corpus luteum as shown in figure 2, A and B.

3. A case of cystic corpus luteum showed follicular hyperplasia of endometrial layer and cystic formation in perimetrium layer of the uterus and cystic corpus luteum of the ovary (figure 3, A and B).

4. A case of mucometra, the findings revealed the present of mononuclear cells infiltrated in endometrial layer with moderate degree of edematous fluid in myometrium and desquamation of endometrial epithelium (figure 4).

5. A case of congenital anomalies of the genital organs of which total bilateral uterine hypoplasia was confirmed as shown in figure 5 A. Cord like structure uterus consists of fibrous tissue (figure 5 B) and stenosis of the lumen was observed.

6. A case of cystic ovary which revealed mild degree of muscular degeneration in myometrial layer with marked connective tissue migration in the uterus (figure 6) and cystic follicle on the ovary.

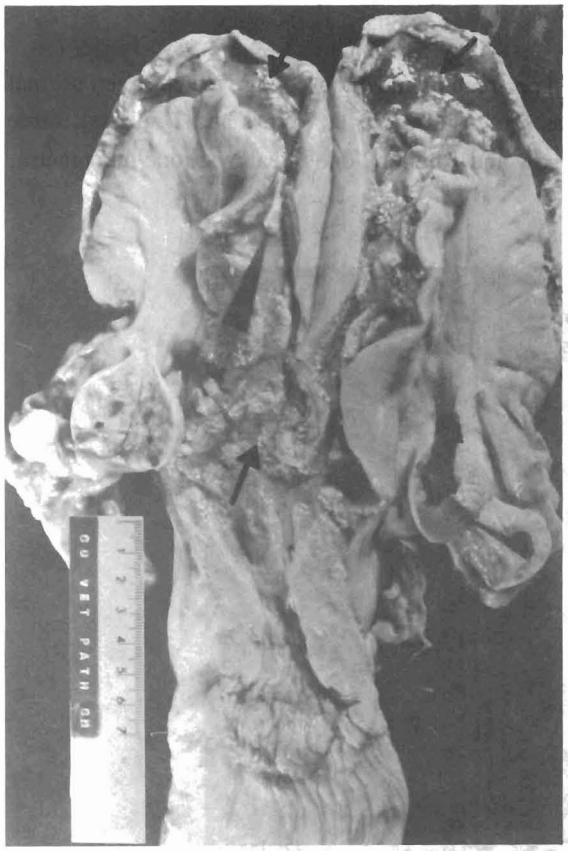


Figure 2A. Chronic endometritis (arrows).

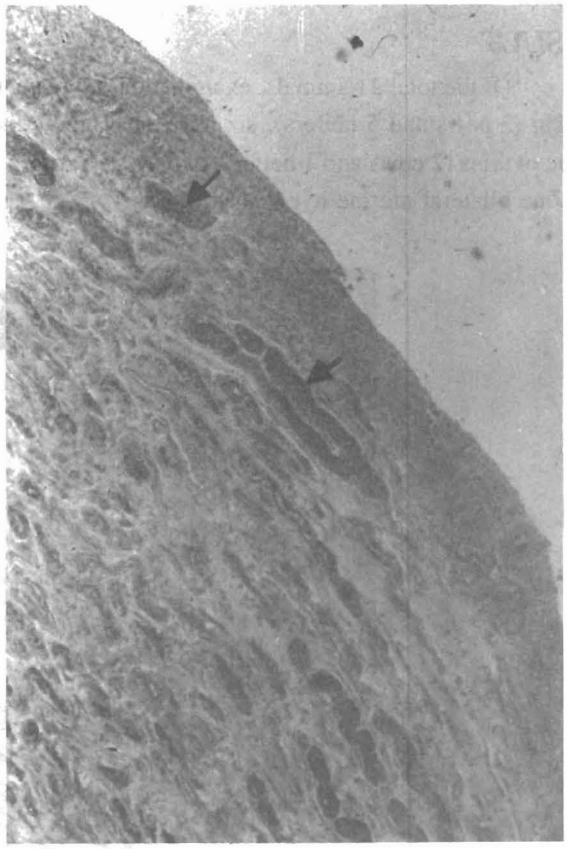


Figure 2B.



Figure 3A. Follicular hyperplasia of endometrial layer and cystic formation in perimetrium layer of the uterus (arrows)

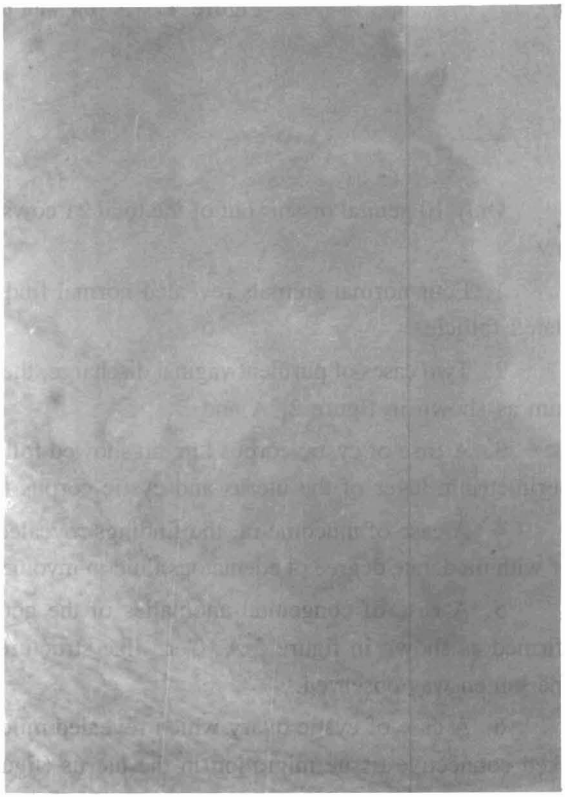


Figure 3B. Cystic corpus luteum of the ovary.

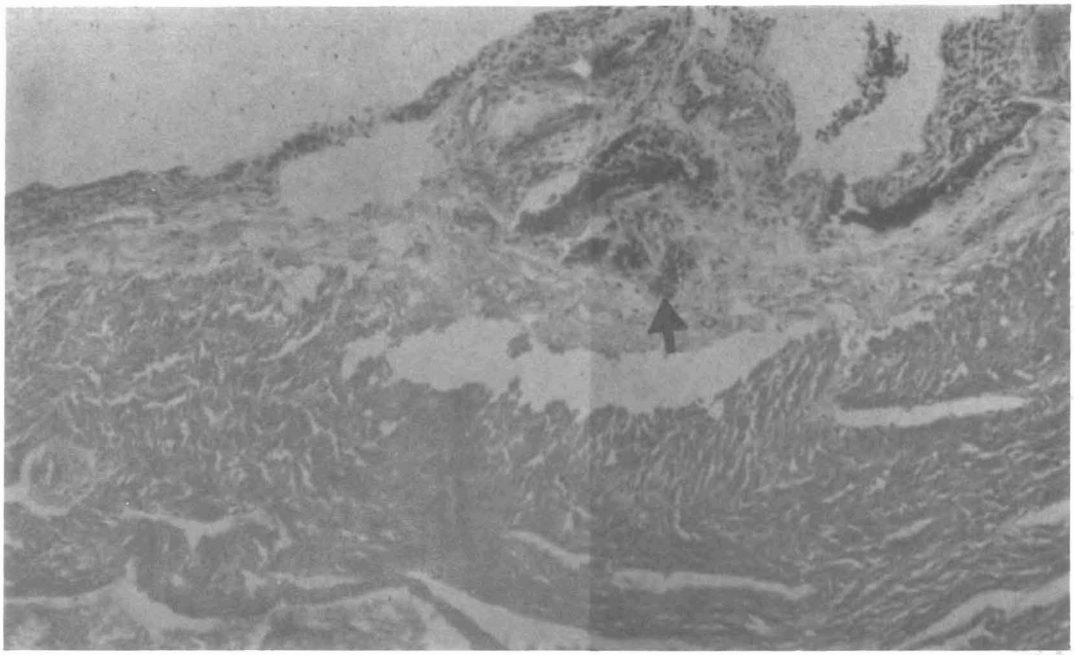


Figure 4. A case of mucometra with the presentation of mononuclear cells (arrow) infiltrated in endometrial layer and edema of myometrium.

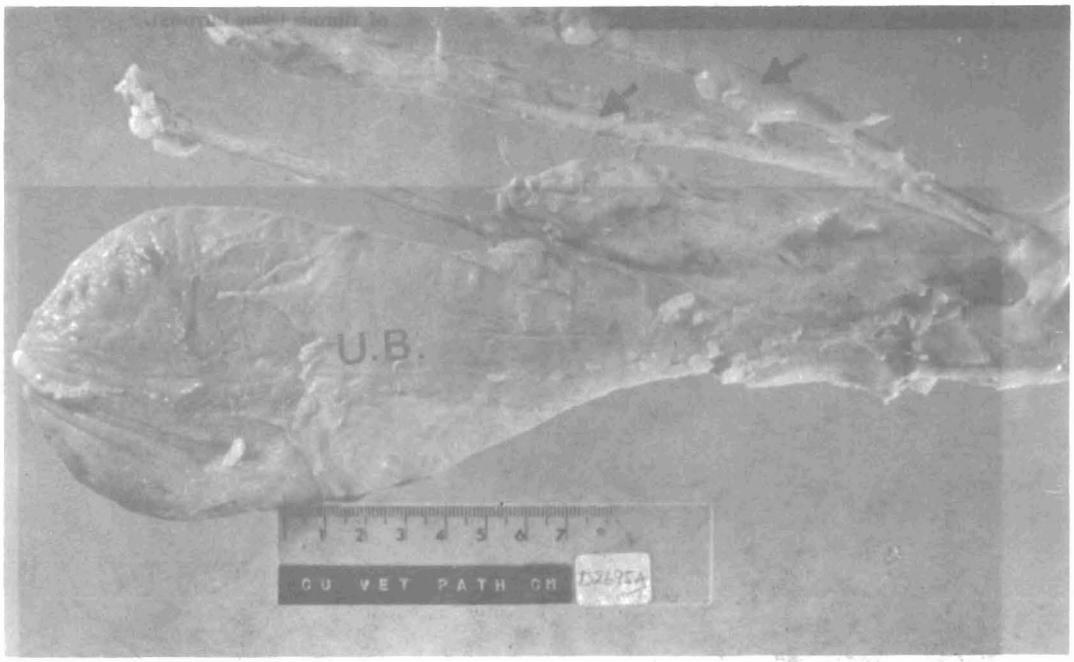


Figure 5A. Congenital anomalies of the genital organ, a total bilateral uterine hypoplasia (arrows). U.B. = Urinary bladder

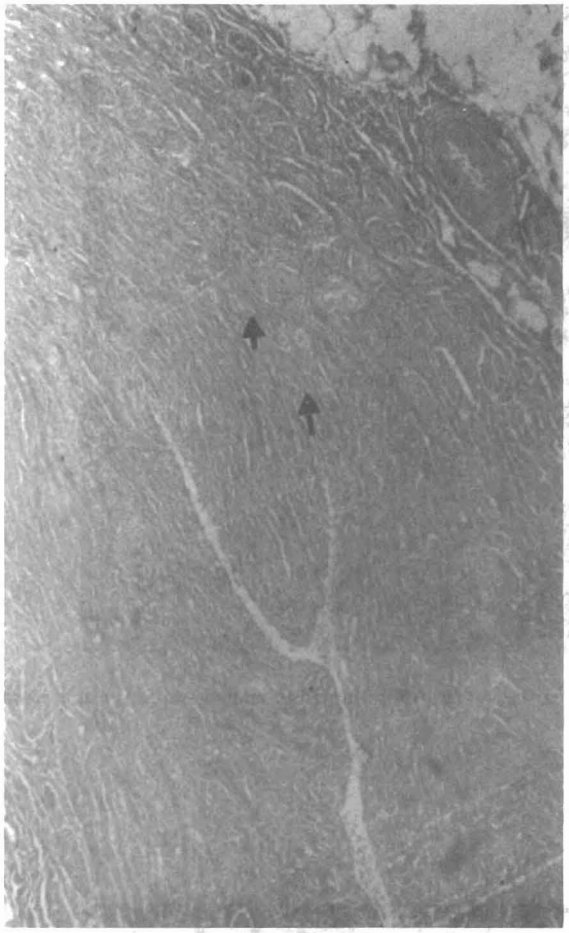


Figure 5B. Cord like structure uterus consists of fibrous tissue (arrows).



Figure 6. A case of cystic ovary cow with mild degree of muscular degeneration in myometrial layer with marked connective tissue migration in the uterus.

DISCUSSION

The histological fingings in this investigation revealed that 60% of infertile cows examined (6/10) had anatomical defect, or hormonal disturbances, or pathological ailment, while the normal finding accounted to be 40% (4/10). The cows which were culled because of infertility in this organization was about 1 per cent and contributed from heifer and cow 52.4 and 47.6% respectively. The problem is rather low when compared with other reports which were more than 3.7 per cent in England (Leech *et al.* cited by Arthur, 1964), 5.2 per cent for Northern Ireland (Gracey cited by Arthur, 1964), and 6 per cent in U.S.A. (Trimberger and Davies cited by Robert, 1971). In order to rule out errors of management leading to lack of detection of oestrus which causes breeding inefficiency all the experimental animals were grouped together in individual stall. Hereditary or congenital anatomic defect of the reproductive tract as in this case was an absence of ovaries and uterus due to agenesis. There is no treatment, thus the animal should be promptly diagnosed and culled.

In case of mucometra in an heifer in this investigation, there was accumulation of vicid mucus about 15 liters in both horns of the uterus. Hysterectomy was attempted to treat the condition. Mucometra recurred later on with the development of ovarian cyst and endometrial hyperplasia proximal to an obstructed cervix. The uteri have thin atrophic walls. Such condition had been discussed by Jubb and Kennedy (1970) and Roberts (1971). Cow with mucometra due to defect of the genital tract is often sterile and should be prompty diagnosed and culled.

Cystic ovaries in dairy cattle is becoming one of the most common causes of infertility. They are characterized by follicular cysts or cystic degeneration of the Graafian follicle, luteal or luteinized cysts, and cystic corpora lutea. Follicular and luteal cysts are anovulatory cysts while cystic corpus luteum is an ovulatory cyst. The cause of both conditions is a failure of the hypophysis to release sufficient amount of luteinizing hormone to induce ovulation and proper development of the corpus luteum (Smith *et al.*, 1972). Cystic corpus luteum contains a fluid filled central cavity (Jubb and Kennedy, 1970). It contains estrogen 2-3 times less than normal ovarian follicular fluid. It is believed that cystic ovaries is hereditary and increasing feeding high in protein stumulates lactation and development of cystic ovaries. Certain males transmit this hereditary cystic C.L., although not pathogenic but is a secondary manifestation of a basic hormonal dysfunction. About 20 to 30 per cent or more of cows with cystic ovaries if they conceive will develop cystic ovaries again at subsequent service periods (Roberts, 1971). The most constant and prominent sign of cystic ovaries is the relaxation of the sacro-sciatic ligament most noticeable at its caudal border because of the relaxing effect of estrogens on the pelvic ligaments. Although, treatment with prostaglandin $F_2 \infty$ in the cases of luteal cyst and cystic corpus luteum were succeeded in induction of estrus but conception was not achieved.

Endometritis has a profound effect upon the fertility of the animal. The infection usually reach the uterus from the vagina at coitus, insemination or parturition or by the circulation. Brus (1954) found that 70% of repeat breeder or cyclic non-breeder cows had endometritis as determined by endometrial biopsy. Clinical signs of endometritis were the presence of a whitish green mucopurulent vaginal discharge. Attempts to treat endometritis with Lugol's iodine had been made but conception was not achieved.

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