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(54) Title: CAUDA EPIDIDYMIS TESTIS INCISION METHOD FOR CATTLE FATTENING (NON-HORMONAL)

(57) Abstract: This invention relates to the cauda epididymis testis incision method for fattening cattle. This invention is associated with the increased body weight of cattle that underwent an incision on their cauda epididymis testicle. This result was achieved without removing the testicle and causing scrotal deformity. This invention aims to provide a non-conventional method (feed formulation and hormone administration) for fattening cattle. The main purpose of this invention is to overcome the existing problems with fattening cattle.



Description**CAUDA EPIDIDYMIS TESTIS INCISION METHOD FOR CATTLE
FATTENING (NON-HORMONAL)****5 Technical Field of The Invention**

This invention relates to the incision method for the cauda epididymis testis, specifically a cauda epididymis testicle incision method that does not remove the testicle, does not cause scrotal deformity, and results in cattle fattening.

10

Background of The Invention

The cauda epididymis incision method has never been used and recorded. However, scrotal excision methods have been applied to calves to accelerate their healing rate and minimize complications. It has become a recommended castration method for tropical countries such as Indonesia. The scrotum excision method is generally conducted by cutting the entire testicle at 1/3 distal of the scrotum and clamping the emasculator in the funiculus spermaticus. With this method, the whole testicle is removed, resulting in permanent scrotum deformity. The advantage of the proposed cauda epididymis testis incision method is that the incision can be made without removing the testicles. Therefore, it will not cause scrotal deformity.

Patent document number WO2019030395A2 titled "Non-invasive animal castration" is a non-invasive castration method used in male or female animals. This method selectively restricts the blood supply to the animal's gonadal tissues to turn off the gonadal tissues. This selective interruption is achieved by administering an effective dose of focused radiation or focused pressure waves to the spermatic cord area in male animals or the suspensory ligament of the ovary in female animals.

Another patent with the number RU2391941C2 titled "Method of boar castration" describes the castration method of male pigs and includes preparing and fixating the animal, administering anaesthesia, making skin incisions, incisions of the subcutaneous tissue and the fascia that are opposite to the

external inguinal ring, then removing the membrane from the fascia, binding the membrane together with the spermatic cord, and leaving the testicles in the scrotal cavity. The advantage of the proposed incision method for the cauda epididymis testicle is that it does not use focused radiation or pressure waves that can affect surrounding cells, and it does not restrict blood flow in the spermatic cord, which would typically result in testicular atrophy (reduction).

Patent number IDS000003502, titled "Composition of Herbal Feed for Cattle Fattening," describes that the composition of herbal feed for cattle fattening consists of *onggok* (tapioca industry waste), pollard, copra meal, palm meal, rice bran, soybean meal, molasses, minerals, dolomite lime, salt, and urea. Therefore, this invention still has shortcomings in the form of dependence on quality, price, and availability of the feed ingredients.

Another invention disclosed in patent IDS000003837 titled "Feed Concentrate Formulation Containing Cocoa Pulp for the Fattening Performance of Balinese Cattle," describes that the concentrate consists of cocoa pulp (5%), smooth bran (20%), coconut meal (20%), shrimp waste flour (21%), corn waste (17%), finely ground corn (14%), molasses (2%), and minerals (1%).

However, the invention of the above feed formulation still has weaknesses and limitations, including fluctuating weight gain that depends on the quality, availability, and price of feed ingredients.

The proposed invention intends to overcome the abovementioned problems by manipulating the animals' physiological functions through incising the cauda epididymis testis to accelerate growth and fattening without removing the testicles and causing scrotal deformity.

Summary of The Invention

The main purpose of this invention is to overcome existing problems, especially regarding cattle fattening, through the incision method of the cauda epididymis testis. This proposed

incision method for fattening cattle consists of making an incision of the cauda epididymis testis without removing the testis. Therefore, it does not result in scrotal deformity and will result in increased body weight.

5 The testicular epididymis cauda incision method is conducted by injecting 2 ml of epidural anaesthesia per animal; followed by administering 4 ml of local anaesthesia (lidocaine) on the testicles; cleaning the area to be incised with soapy water, 70% alcohol, and 3% povidone-iodine; making an incision of the
10 scrotum in the testicular cauda; restricting blood flow with arterial forceps; and suturing the testicular cauda duct. The incision in the cauda epididymis is $\pm$ 1.5 cm wide, and 5 ml of antibiotic is administered on the scar and suturing on the scrotum.

15 Description of The Invention

This invention relates to the incision method of the cauda epididymis testis for fattening cattle, consisting of making an incision to the cauda epididymis to stop the spermatogenesis
20 process.

This invention aims to determine and compare the progesterone hormone castration method with the cauda epididymis testis incision method for weight gain. The invention was performed on nine Balinese cattle with body weights of 150 kg -
25 250 kg that were intensively maintained for two months with forage feed ad libitum. The inventors compared three treatment groups: the control group (without treatment, P0, n = 3), the group with the cauda epididymis testis incision (P1, n = 3), and the group given the progesterone hormone injection treatment
30 (P2, n = 3). The P2 group was injected with the MPA (medroxyprogesterone acetate) progesterone hormone through intramuscular injection at 150 mg per animal.

The cauda epididymis testis incision method (P1) was performed while the cattle stood in a cage clamp. The method
35 began by injecting 2 ml of epidural anaesthesia per animal. As much as 4 ml of a local anaesthetic (lidocaine) was then given

to the testicle. Next, the scrotum area to be incised was cleaned with soapy water and 70% alcohol. The scrotum was then disinfected using 3% povidone-iodine on the incision area. After that, the scrotal incision was performed on the cauda testis and blood flow was restricted with arterial pliers. Then, the cauda testis duct was sutured. The incision on the epididymis cauda was 1.5 cm wide, and blood flow was restricted due to the arterial forceps and the suturing of the cauda testis duct. Next, 5 ml of an antibiotic was administered to the wound, and the scrotum was sutured. The wound was then sprayed with Gusanex or a wound care spray. The final stage is the intramuscular injection of antibiotics, anti-inflammatories, and a vitamin B complex per their recommended dosages.

Table 1. Weight gain of Balinese cattle in the treatment group

Groups	Condition	Weight gain (kg/month)
P0	Control	09.67 ± 1.56 ^a
P1	Before	10.53 ± 1.47 ^a
	After	23.91 ± 1.77 ^b
P2	Before	10.67 ± 1.15 ^a
	After	22.67 ± 7.09 ^b

ab

Different letters in the same column indicate a real difference ($P < 0.05$). P0 = control group (without treatment), P1 = group with testicular epididymis cauda incision, P2 = progesterone hormone injection treatment group

The paired T-test (Paired Sample T-test) revealed an increase in the average body weight of 23.91 kg/month or 0.797 kg/day on cattle given the cauda epididymis testis incision method. This increase is higher than the control group (9.67 kg/month or

0.322 kg/day) and the progesterone hormone injection treatment group (22.67 kg/month or 0.756 kg/day). The study concluded that the castration method in both treatment groups resulted in a higher body weight gain compared with the control.

5 The above data indicate that this invention can benefit cattle fattening because it can practically and efficiently increase the cattle's weight significantly without removing their testicles and causing scrotal deformity. This invention presents a practical improvement, especially for the incision
10 method of cauda epididymis testis for fattening cattle.

Claims

1. A cauda epididymis testis incision method for fattening cattle (non-hormonal), consisting of:

- a) administering 2 ml of epidural anaesthesia per animal;
- b) providing 4ml of local anaesthesia (Lidocaine) to the testicle;
- c) cleaning the scrotum area to be incised with soapy water, 70% alcohol, and 3% povidone-iodine;
- d) incising the scrotum in the testicular cauda, restricting blood flow with arterial forceps, and suturing the testicular cauda duct;
- e) making a 1.5 cm incision at the cauda epididymis in the cauda epididymis section that has restricted blood flow with arterial pliers and has been sutured;
- f) administering 5ml of antibiotics on the wound and the sutured scrotum;
- g) providing the wound care spray Gusanex; h. giving an intramuscular injection of antibiotics, anti-inflammatory, and a B-complex vitamin per their recommended dosages.

2. The cauda epididymis testis incision method for fattening cattle in Claim 1 was performed without removing the testicles and causing scrotal deformity, which is characterized by an increase in cow body weight of 23.91 kg/month or 0.797 kg/day.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ID2023/000006

A. CLASSIFICATION OF SUBJECT MATTER A61D 1/06(2006.01)i; A61D 7/00(2006.01)i According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61D 1/06(2006.01); A61B 19/00(2006.01); A61K 36/899(2006.01); A61K 9/12(2006.01); A61P 15/00(2006.01); A61P 23/02(2006.01) Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean utility models and applications for utility models Japanese utility models and applications for utility models Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: incision of cauda epididymis testis, scrotum, anaesthesia, fattening, cattle				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	PIELER, D. et al., 'Endocrine testicular function and spermatogenesis persist in calves after partial scrotal resection but not Burdizzo castration', Theriogenology, 2014, Vol. 81, pages 1300-1306 pages 1301-1305	1-2		
A	MARTI, S. et al., 'Use of topical healing agents on scrotal wounds after surgical castration in weaned beef calves', Can Vet J., 2017, Vol. 58, pages 1081-1085 whole document	1-2		
A	US 5254125 A (PORTER, W. et al.) 19 October 1993 (1993-10-19) whole document	1-2		
A	US 2021-0052495 A1 (ANIMAL ETHICS PTY LTD) 25 February 2021 (2021-02-25) whole document	1-2		
A	CN 110013525 B (QUJING MEDICAL COLLEGE) 11 June 2021 (2021-06-11) whole document	1-2		
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; border: none;"> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; vertical-align: top; border: none;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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Information on patent family members

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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
US	5254125	A	19 October 1993	US	5922150	A	13 July 1999
US	2021-0052495	A1	25 February 2021	EP	3761969	A1	13 January 2021
				EP	3761969	A4	24 November 2021
				WO	2019-169447	A1	12 September 2019
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