



Combination of Sulfuric Acid (H₂SO₄) and Aquadest to Detect Goat Pregnancy

AUTHORS INFO

Nur Ifa Rohmayanti

Universitas Sembilanbelas November Kolaka
nurifa29@yahoo.co.id
+6282345236592

Ayu Wulandari

Universitas Sembilanbelas November Kolaka
ayuningsih@gmail.com
+6282291621941

Muh. Rifai

Universitas Sembilanbelas November Kolaka
rifaiklk@yahoo.co.id
+6281346374908

Hastuti

Universitas Sembilanbelas November Kolaka
hastutijalla@gmail.com
+6285255092481

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Abstract

Pregnancy detection is an essential thing to do after cattle are mated. In general, early pregnancy detection is needed regarding identifying animals that are not pregnant immediately after natural mate or artificial mate, so that production time is lost because infertility can be suppressed by proper handling such as livestock must be sold or dialing (cut). It is aimed at reducing costs for breeding, programs and helping livestock management economically. Many methods can be used for pregnancy detection depending on the species, age of pregnancy, cost, accuracy, and speed of diagnosis. The purpose of each method used in pregnancy examinations is to determine the pregnancy status with 100% accuracy, especially in the Watubangga and Toari areas, which breeders are still applying traditional methods, which this detection method can reduce costs, time and effort, especially this detection method relatively cheap and easy to do.

Keywords: pregnancy detection, aquadest, sulfuric acid, urine

A. Introduction

Pregnancy detection is one of the essential actions to be taken to find out whether or not an animal is pregnant or to know the normal reproductive tract of the animal. This pregnancy examination is also one way to monitor and prove the results of Artificial Insemination quickly and adequately. The lust cycle used as the basis for diagnosing IB results is between 28-35 days.

Pregnancy examinations should be carried out after 60 days after Artificial Insemination or post-mate, fearing a miscarriage. Purpose of pregnancy examinations in these cows has a goal, including to determine whether there are cows as early as possible to find out if there are abnormalities in the reproductive tract that can cause cows to become pregnant. To improve livestock management efficiency by identifying non-pregnant cows, so immediately re-mated by a minimum time delay. Identify animals that are not pregnant directly after mate or IB so that production time is lost because infertility can be suppressed by proper handling, as a consideration if livestock must be sold or culled, to reduce costs for breeding programs using expensive hormonal techniques, and to help economically manage livestock. Hunter (1995) and Toelihere (1981) explained that ideal pregnancy diagnosis method is inexpensive, easy to do, fast and straightforward, and can immediately produce results so that the cow can be mated back at the optimum time correctly.

In reproductive performance pregnancy detection is one of the problems that are often faced after mating or in AI (Artificial Insemination), for which a pregnancy detection method that should be easy, inexpensive, fast and precise is needed so that it can efficiently handle the pregnant female cattle. Self-examination may be very necessary. Currently, pregnancy detection is generally done by rectal palpation, and the right possibility can occur 2-3 months after insemination if done less than two months after the cattle in IB will be challenging to detect pregnancy, this method is more appropriate with increasing age of the pregnancy. Several diagnostic techniques have been applied in the field. The most popular symptomatic way in cattle is rectal palpation. Pregnancy detection can be quickly done using a solution of Sulfuric Acid (H_2SO_4). Wahyu, Illawati, Suardi, & Jaswandi (2012) that the use of concentrated Sulfuric Acid (H_2SO_4) with a dose of 0.1 ml can be used in early pregnancy diagnosis in cattle but with a longer time (25-40 seconds).

The application of this method is difficult to implement because it requires sufficient expertise and experience and the risks posed if done with poor handling. At the field level, the number of personnel for the application of this method is minimal. Therefore, it is necessary to find an alternative solution so that an ideal way can be seen that can be applied to community goats. The theoretical basis for examining urine is the presence of the estrogen hormone in pregnant cows secreted through urine. The estrogen hormone comes from the placenta. When mixed with sulfuric acid, the estrogen will be burned so that there is color fluorescence. The application of this method is effortless and meets the requirements of ideal conditions for pregnancy diagnosis, so it is very appropriate to be applied at the farmer level. The technique of pregnancy examination using urine as a sample is an easy and inexpensive way, which can be done by anyone without the need for specialized skills.

B. Methodology

1. The Material

The material of this research is goats whose use must have permission from the farmer first and agree on the goat rental price that will be used as the research object, Aquadest, Sulfuric Acid (H_2SO_4) / Accu Zuur, and Urine goat as samples.

2. Research Procedures

This research was conducted in two villages, the first village in Ranoteta village, Watubangga Subdistrict, Kolaka Regency (Region I) and the second Village in Rahabite Village, Toari District, Kolaka Regency (Region II). The study was conducted in the morning from 06.30 - 09.00 AM. In this study using the main ingredients namely Aquadest, Sulfuric Acid (H_2SO_4)/Accu Zuur and goat urine as a sample, the total sample amounted to 10 urine from different goats.

The mixing method is to stabilize several ml of Aquadest mixed with several ml of urine (dissolved) then stir until the mixture becomes as homogeneous as possible, then mix several ml of Accu, let stand for several seconds, then see the reaction that appears in the solution.

Research in Region I uses 5 treatments with explanations as follows:

1. T.1: 10 ml. Aquadest + 15 ml. Accu + 2 ml. Urine
2. T.2: 5 ml. Aquadest + 5 ml. Accu + 1 ml. Urine
3. T.3: 5 ml. Aquadest + 0.2 ml Accu + 1 ml. Urine
4. T.4: 5 ml. Aquadest + 7.5 ml. Accu + 1 ml. Urine
5. T.5: 10 ml. Aquadest + 20 ml. Accu + 20 ml. Urine

Then using five different samples namely:

1. The sample I: Goats that have been mate around after two weeks
2. Sample II: Goats that have been mate about after two weeks
3. Sample III: Goats who have mated about after two weeks
4. Sample IV: Goats that have been pregnant for two months
5. Samples V: Goats that have been pregnant for three months

Similarly, research in Region II also uses 5 treatments with the following explanation:

1. T1: 10 ml. Aquadest + 15 ml. Accu + 2 ml. Urine
2. T2: 0.16 ml. Aquadest + 0.5 ml. Accu + 0.03 ml. Urine
3. T3: 5 ml. Aquadest + 0.2 ml Accu + 1 ml. Urine
4. T4: 5 ml. Aquadest + 7.5 ml. Accu + 1 ml. Urine
5. T5: 10 ml. Aquadest + 20 ml. Accu + 20 ml. Urine

Then using a different sample, namely:

1. The sample I: Mate around after one month
2. Sample II: Already mate about after one month
3. Sample III: Mate about after less than two months
4. Sample IV: Already pregnant for four months
5. Sample V: It's six months pregnant.

3. Parameters of Research

Parameters of this study were goat pregnancy, the accuracy of mixed methods of sulfuric acid (H_2SO_4) and aquadest in detecting goat pregnancy.

4. Data Analysis

The research uses quantitative data collection techniques; by conducting a direct test of the object of study and handling equipment and other supporting materials. Data obtained from observations were analyzed using descriptive analysis by comparing the sources of research results from various researchers through literature. This analysis comes from data or sources that have been obtained in the process of the previous research procedure.

C. Result and Discussion

1. Research in Region I

Based on the first research conducted in Ranoteta Subdistrict, Watubangga, Kolaka Regency by taking five urine samples, the results obtained as shown in Table 1.

Table 1. Research Results in the Region I

No	Samples	T.1	T.2	T.3	T.4	T.5
1.	I	(-)	(-)	(-)	(-)	(-)
2.	II	(-)	(-)	(-)	(-)	(-)
3.	III	(-)	(-)	(-)	(-)	(-)
4.	IV	(-)	(-)	(-)	(-)	(-)
5.	V	(-)	(-)	(-)	(-)	(-)

Source: Region I Research Result Data

Description: Result (-): Solution does not show any reaction.

The results of the research in Region I show that the solution does not show any reaction, this possibility can occur because of several reasons, including: (1) the goats studied were not pregnant, (2) the concentration of the three ingredients was incorrect. It is not by the Principle of Partodihardjo (1992) that by adding a solution of 2 ml urine and 10 ml of aquadest then burned with 15 ml concentrated sulfuric acid will cause fluorescence gas on the surface of the liquid. The gas arises because of the presence of the hormone estrogen in the urine. While P1 (attached) does not cause any reaction, (3) the Accu Zuur type used is incorrect, and (4) the detection technique error is probably due to the incorrect use of Sulfuric Acid (H_2SO_4) failing. It is in line with this not by the opinion of Satriyo (2001) and Wahyu et al. (2012) which states that the accuracy or accuracy of the use of concentrated Sulfuric Acid (H_2SO_4) compared to palpation per rectal is 97%.

2. Research in Region II.

The second study was conducted in Rahabite Village, Toari Subdistrict, Kolaka Regency by taking five urine samples, obtained the results as in Table 2.

Table 1. Research Results in the Region II

No	Samples	T.1	T.2	T.3	T.4	T.5
1.	I	(+)	(-)	(-)	(-)	(+)
2.	II	(-)	(-)	(-)	(-)	(-)
3.	III	(+)	(-)	(-)	(+)	(+)
4.	IV	(+)	(-)	(-)	(+)	(+)
5.	V	(+)	(+)	(+)	(+)	(+)

Source: Region II Research Results Data

Description: Result (-): Solution does not show any reaction, (+): Solution shows a response like the appearance of gas bubbles.

Based on the results of research in Region II the solution showed different reactions, with the following explanation:

1. The sample I: In example I, it can be seen that the solution at P1 and P5 shows a response like the appearance of gas bubbles. While the solution in P2, P3 and P4 solutions showed no reaction. Sample II: In sample II it can be seen that all treatments from P1 to P5 solution did not show any response.
2. Sample III: In sample III it can be seen that in P2 and P3 the solution does not show any reaction, while in P1, P4 and P5 the solution shows a response like gas bubbles appear.
3. Sample IV: In sample IV it can be seen that in P2 and P3 the solution shows no reaction, whereas in P1, P4, and P5 the solution shows a response like the appearance of gas bubbles.
4. Sample V: In sample V it can be seen that all treatments starting from P1, P2, P3, P4, and P5 the solution shows a reaction like the appearance of gas bubbles. Only solutions in P2 and P3 show gas bubbles far less than the other treatments).

From the results of the research in Region II, the reaction of the solution did not show any response, in this case, there was a possibility of inaccurate concentrations of the three ingredients and technical errors in detecting, and the animals were not pregnant. The second reaction shows the appearance of gas bubbles in the solution, in this case, the possibility of the animal is pregnant. This is in accordance with what was stated by Partodihardjo (1992) which indicates that by adding 2 ml of urine solution and 10 ml of Aquadest then it will be burned with 15 ml Concentrated sulfuric acid will cause fluorescence gas on the liquid surface, this is not according to Iliawati (2009), the use of 0.5 ml concentrated sulfuric acid is more useful for pregnancy detection. The method of 0.5 ml concentrated sulfuric acid produces a color that changes from light yellow to purplish this shows a definite pregnancy.

D. Conclusion

Based on the results of the study it can be concluded that In Regions I and II showed that the pregnancy detection method using Sulfuric Acid (H_2SO_4) and Aquadest could be used for goat pregnancy detection, this was based on the results of research in Region II where solutions showed pregnancy signs. Whereas the accuracy of this method is only around 52% and in essence, the detection of pregnancy with this method has not shown maximum results, this is characterized by physical changes from insignificant solutions.

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