



# Plagiarism Checker X Originality Report

**Similarity Found: 39%**

Date: Sunday, March 15, 2020

Statistics: 549 words Plagiarized / 1425 Total words

Remarks: Medium Plagiarism Detected - Your Document needs Selective Improvement.

---

Annual Conference of Science and Technology Journal of Physics: Conference Series 1375 (2019) 012019 IOP Publishing doi:10.1088/1742-6596/1375/1/012019 1 Artificial Insemination using liquid sperm Filial Ongole Bull after sexed with different methods E D Kusumawati<sup>1,\*</sup>, T Susilawati<sup>2</sup>, N Isnaini<sup>2</sup>, S Rahayu<sup>3</sup>, A P A Yekti<sup>2</sup>, K Kuswati<sup>2</sup>, A Ridhowi<sup>2</sup> and S Rahadi<sup>4</sup> <sup>1</sup>Faculty of Animal Husbandry, Universitas Kanjuruhan Malang, Malang-65148, Indonesia <sup>2</sup>Faculty of Animal Husbandry, Brawijaya University, Malang-65145, Indonesia <sup>3</sup>Biology Department Faculty of Mathematics and Natural Sciences, Brawijaya University, Malang-65145, Indonesia <sup>4</sup>Faculty of Animal Science, Universitas Halu Oleo, Kendari, 93232, Indonesia \*enike@unikama.ac.id Abstract.

The purpose of this study was to determine the success of artificial insemination (AI) using liquid sperm Filial Ongole Bulls after sexed by the percoll density gradient centrifugation (PDGC) and egg white sedimentation (EWS) sexed methods. The study materials were 135 cattle were inseminated using non sexed semen, PDGC and EWS sexed methods. Non-return rate (NRR) and the conception rate (CR) are observed.

The research design used for the success of AI using chi square. The result of pregnancy examination at the age of 3 months found 21 head of pregnant cows from 45 cattle in AI with without sexed (control), 14 head of pregnant cattle from 45 cattle in the AI with EWS method, 18 head of pregnant cattle from 45 cattle in AI with PDGC method.

The result showed that CR value using liquid sperm result of EWS, PDGC and without sexed were very significant ( $P < 0.01$ ). CR value is still higher sperm without sexed (46.67%) followed by PDGC (40%) and EWS (31.11%). The value of conception rate is lower than sexed using PDGC method. The success of AI showed better PDGC sexed method than EWS sexed method based on AI liquid sperm results with CR analysis. 1.

Introduction Artificial Insemination can be increased in value by using the calf program that is produced to have the sex as expected, because it supports the breeding program in the selection of superior seeds [1]. Centrifugation of the percoll density gradient is used as a way of separating sperm X and Y. This is because percoll is a medium that can be made with various densities, does not penetrate cell membranes and has low viscosity [2].

Percoll is still imported so that the price is expensive. Therefore, it is necessary to look for alternative other ingredients as a substitute of egg whites. Egg white is often called albumin is part of the egg that serves as an antibacterial and buffer to maintain the physical and chemical properties of eggs [3] is quite effective as a media separation of sperm.

Therefore, it is necessary to know how the success of artificial insemination using percoll density gradient centrifugation (PDGC) and egg white sedimentation (EWS) sexed methods in Filling Ongole bull. Annual Conference of Science and Technology Journal of Physics: Conference Series 1375 (2019) 012019 IOP Publishing doi:10.1088/1742-6596/1375/1/012019 2 2. Method The study materials were 135 cattle.

Forty-five cattle were inseminated using non sexed semen, 45 cattle were inseminated using PDGC sexed methods, and 45 cattle were inseminated using EWS sexed methods. Non-return rate (NRR) is observed within a period of 20-30 days and the conception rate (CR) is observed with per rectal palpation after 90 days from AI. Artificial Insemination (AI) was done at PT Widodo Makmur Perkasa, Pasir Tengah, Cianjur, West Java. The research design used for the success of AI using chi square.

The result of pregnancy examination at the age of 3 months found 21 head of pregnant cows from 45 cattle in AI with without sexed (control), 14 head of pregnant cattle from 45 cattle in the AI with EWS method, 18 head of pregnant cattle from 45 cattle in AI with PDGC method. 3. Results and discussion Fertility of sperm in AI is assessed through fertilization rates of non-return rate (NRR) and conception rate (CR).

The sperm fertilization test was performed with AI using liquid sperm without sexed, under layer EWS sexed and upper layer PDGC sexed on 135 cattle with 45 cattle in a treatment. The results of NRR and CR observations can be seen in Table 1. Table 1. Non Return Rate and Conception Rate Observation. Treatment Number of Cattle NRR CR Cattle % Cattle % Non sexed 45 26 57,78 21 46,67 EWS Sexed Method 45 27 60 14 31,11 PDGC Sexed Method 45 27 60 18 40 The NRR value of all treatments is still above 50%. The value of NRR is still in good category (> 50%). The results of [4] Bali cattle in the age

group of 5-6 years have NRR (77.42%) compared to cattle in the age group of 3-4 year (87.50%).

All CR values in cattle inseminated treatment of non-sexed sperm were greater than CR of cattle inseminated sexed sperm. Accurate CR scores can only be demonstrated by examining pregnancy on days 60-90 after insemination. The low value of CR sexed was caused because the spermatozoa membrane can be damaged during the sexed process thereby decreasing the quality of sperm [3].

The result of pregnancy examination (CR) at the age of 3 months found 21 head of pregnant cattle from 45 cattle in AI with non-sexed sperm (control), 14 head of pregnant cattle from 45 head of cattle in AI with EWS sexed sperm, 18 cattle pregnant from 45 cattle in the AI with PDGC sexed sperm. Result of data analysis with Chi-Square test showed that CR value using liquid sperm result of EWS and PDGC sexed method and non-sexed were very significant ( $P < 0.01$ ).

The abnormality of PDGC sexed method was 4.42% with 64.25% sperm motility [3]. The existence of cattle that are not pregnant at the time of rectal palpation examination due to short lust 2-3 hours and the existence of silent heat, so need to look directly the quality of lust by looking at the condition of each cattle's vulva. Signs of lust often seen are slimy, swollen, warm, red and swollen vulva.

Many cattle have small cervical conditions that cause difficulty in semen deposition. Conception Rate value is still higher than non-sexed sperm (46.67%) followed by PDGC sexed (40%) and EWS sexed (31.11%). The success of fertilization lies in the integrity of sperm acrosomes. However, applications of various reproductive aids technologies such as AI can cause damage to sperm.

If the membrane plasma is not functioning completely, the sperm cannot fertilize [5-7].

4. Conclusion The success of AI showed better PDGC sexed method than EWS sexed method based on AI liquid sperm results with CR analysis. The value of conception rate EWS sexed method is lower than sexed using PDGC method.

Annual Conference of Science and Technology Journal of Physics: Conference Series 1375 (2019) 012019 IOP Publishing doi:10.1088/1742-6596/1375/1/012019 3

Acknowledgements We acknowledged Ristekdikti grand: PDD. We thank to LPPM Universitas Kanjuruhan Malang. References [1] E D Kusumawati, H Leondro T Susilawati & N Isnaini 2015 Spermatozoa Viability of Filial Ettawa Goat After Sexing Process In Proceeding International Seminar Improving Tropical Animal Production For Food Security 1(1): 127-130 [2] Y J Yi G Manandhar M Sutovsky S W Zimmerman V Jonáková F

W V Leeuwen R Oko C S Park and P Sutovsky 2010 Interference With The 19S Proteasomal Regulatory Complex Subunit PSMD4 on The Sperm Surface Inhibits Sperm-Zona Pellucida Penetration During Porcine Fertilization.

Cell Tissue Res 341:325-340 [3] E D Kusumawati N Isnaini A P A Yekti M Luthfi L Affandhy D Pamungkas Kuswati A Ridhowi H Sudarwati T Susilawati and S Rahayu 2017 The Quality Of Sexed Semen On Filial Ongole Bull Using Percoll Density Gradient Centrifugation Method Asian Journal of Microbiology Biotechnology & Environmental Sciences Paper 19(1): 189-199 [4] T Sali, L O B La Ode Nafiu S Rahadi A Napirah I W Sura & F Lopulalan 2017 Efektivitas Sinkronisasi Estrus dan Fertilitas Spermatozoa Hasil Sexing pada Sapi Bali di Sulawesi Tenggara.

Jurnal Veteriner September 18(3): 1-7 [5] E D Kusumawati & H Leondro 2015 The Quality of Fresh Semen of Bulls at 50C and 240C With or Without Diluent In Proceeding International Seminar Improving Tropical Animal Production For Food Security 1(1): 122-126 [6] P P P Sekosi, E D Kusumawati A T N Krisnaningsih 2016 Motilitas Dan Viabilitas Semen Segar Kambing Peranakan Etawa (PE) Dengan Menggunakan Pengencer Cauda Epididymal Plasma (CEP-2) Pada Lama Dan Suhu Simpan Yang Berbeda Jurnal Sains Peternakan 4(1): 34-49 [7] E D Kusumawati H Leondro A T N Krisnaningsih T Susilawati N Isnaini & R Widhad 2016 Pengaruh Suhu Dan Lama Simpan Semen Segar Terhadap Motilitas Dan Abnormalitas Spermatozoa Kambing Peranakan Etawa (PE).

In Seminar Nasional Hasil Penelitian 4(1): 199-208

#### INTERNET SOURCES:

24% - <https://iopscience.iop.org/issue/1742-6596/1375/1>

<1% - <http://giesed2018.interconf.org/kfz/pages/abstracts1.php>

1% - <https://iopscience.iop.org/article/10.1088/1755-1315/370/1/012027/pdf>

<1% - <https://open.library.ubc.ca/handle/2429/26948>

<1% -

[https://www.researchgate.net/publication/23185057\\_Detection\\_of\\_quantitative\\_trait\\_loci\\_affecting\\_non-return\\_rate\\_in\\_French\\_dairy\\_cattle](https://www.researchgate.net/publication/23185057_Detection_of_quantitative_trait_loci_affecting_non-return_rate_in_French_dairy_cattle)

<1% -

[https://www.researchgate.net/publication/320748631\\_Pengaruh\\_perbedaan\\_waktu\\_inseminasi\\_buatan\\_terhadap\\_keberhasilan\\_kebuntingan\\_sapi\\_Brahman\\_Cross](https://www.researchgate.net/publication/320748631_Pengaruh_perbedaan_waktu_inseminasi_buatan_terhadap_keberhasilan_kebuntingan_sapi_Brahman_Cross)

<1% -

[https://www.researchgate.net/publication/6921149\\_Pregnancy\\_rate\\_and\\_first-service\\_conception\\_rate\\_in\\_Angus\\_heifers](https://www.researchgate.net/publication/6921149_Pregnancy_rate_and_first-service_conception_rate_in_Angus_heifers)

<1% -

<http://www.veterinaryworld.org/Vol.3/April/Incidence%20of%20Tuberculosis%20in%20a%20nd%20around%20Banglore.pdf>

3% - <http://scholar.google.co.id/citations?user=FczItW8AAAAJ&hl=id>

1% - <https://cafnrfaculty.missouri.edu/sutovskylab/publications/>

4% - <http://www.agripreneurship.com/popular/259/>

1% - <https://fapet.ub.ac.id/dosen/aulia-puspita-anugra-yekti-s-pt-mp-m-sc/?lang=en>

2% -

[https://www.researchgate.net/publication/320619361\\_Efektivitas\\_Sinkronisasi\\_Estrus\\_dan\\_Fertilitas\\_Spermatozoa\\_Hasil\\_Sexing\\_pada\\_Sapi\\_Bali\\_di\\_Sulawesi\\_Tenggara](https://www.researchgate.net/publication/320619361_Efektivitas_Sinkronisasi_Estrus_dan_Fertilitas_Spermatozoa_Hasil_Sexing_pada_Sapi_Bali_di_Sulawesi_Tenggara)