SUMMARY

Local goat has the advantage of easily adapt to the environment with low quality food but it has low genetic quality and productivity. One of the local goats is Kacang goat with the most population (Ginting dan Fera, 2008). It is necessary to considered ways to improve the genetic of Kacang goats (Sitepu *dkk*., 2018). *Loka Penelitian Kambing Potong* has developed Boerka goat, cross breeding goat between Boer goat and Kacang goat that can increase productivity 30-45% compared to Kacang goat (Ginting dan Fera, 2008).

There are difficulties in distribution and improving genetic quality of Boerka goats. Artificial Insemination (AI) is expected that it will be able to spread the seeds in a sustainable manner with maintained quality (Husin *dkk*., 2007). Frozen semen is the most useful form for AI because it can be stored for an unlimited period (Patel *et al*., 2017). Semen needs antioxidants supplementation in extender to improve spermatozoa function and reduce the negative effect of oxidation stress caused by Reactive Oxygen Species (ROS) during preservation (Allai *et al*, 2010). Green tea (*Camellia sinensis*) has metabolites that possessing antioxidant activity (Roychoundhury *et al*., 2017).

This research aims to prove that the addition of green tea (*Camellia sinensis*) extract in egg yolk skim milk extender could increase the spermatozoa motility, viability, plasma membrane integrity, and decrease DNA fragmentation of Boer crossbred goat. The sample used is fresh semen of Boer crossbred goat, diluted in egg yolk skim milk extender with green tea extract. There are three treatments and

one control based on dose of green tea extract, 0.05 mg/100 ml extender as T1, 0.01 mg/100 ml extender as T2, 0.15 mg/100 ml extender as T3, and no addition of extract as T0, hen post-thawing examinatination is carried out. The research result shows that the dose of 0.15 mg/100 ml extender give the best result of spermatozoa motility, viability, plasma membrane integrity, and DNA fragmentation compare to other treatment ($P<0.05$).

Green tea extract contains polyphenols which are antioxidants that inhibit the peroxidation reaction where free radicals are not form and can suppress ROS. The hydroxyl group of catechin compounds acts as an antioxidant capable of reducing the production of ROS (Susilowati, *dkk*., 2018). Green tea polypenol acts as chain breaking antioxidant and protects the plasma membrane from lipid peroxidation (Ratnani, *et al*., 2017), it also can acts by requisitioning metal ions by the catechin moieties in polyphenol molecules (Roychoundhury, *et al*., 2017).

EFFECT OF ADDITION OF GREEN TEA (*Camellia sinensis*) EXTRACT IN EGG YOLK SKIM MILK EXTENDER ON POST-THAW SPERMATOZOA QUALITY OF BOER CROSSBRED GOAT

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ABSTRACT

This research was conducted to investigate the effect of addition of green tea (*Camellia sinensis*) extract in extender on post-thaw spermatozoa motility, viability, plasma membrane integrity, and chromatin integrity. Sample was collected from ejaculate of Boer crossbred goat. The semen sample were diluted in egg yolk skim milk extender supplemented with green tea extract of 0 (T0) as control, 0.05 (T1), 0.1 (T2), and 0.15 (T3) mg/100 ml extender, respectively. Data analyzed using Analisis of Variant (ANOVA) One Way followed with Duncan to determine significant differences between treatments. The result showed that T2 had the highest post-thaw spermatozoa motility, viability, plasma membrane integrity, and lowest DNA fragmentation compared to other treatments. The result of the study suggest that semen samples diluted in egg yolk skim milk extender with green tea extract dose of 0.1 mg/100 ml extender had the highest semen quality.

Key words: green tea extract, Boer crossbred goat, post-thaw, spermatozoa quality