

## **ABSTRACT**

**Background:** Vegetarian lifestyle in Indonesia is increasing every year. The plantations that were popular in vegetarian circles is seed flaxseed. Flaxseed contains of Phytoestrogens that have structures such as steroids can inhibit spermatogenesis. The process of spermatogenesis which disrupted is causing a decrease in the quantity of sperm. The purpose of this research is to know the influence of the giving of the flaxseed against a concentration of spermatozoa of the rat.

**Methods:** This research is Experimental research with the design of the post test only control group design using a sample of 28 male rats (*Rattus norvegicus*) adapted for 7 days, divided into a control group and treatment group grant of 250 mg/a dose of flaxseed 200gBB, 200gBB, 500 mg/1000 mg/200gBB. Research done in the laboratory of the Centre of studies of Gadjah Mada University food and nutrition during the 48 days. The concentration of spermatozoa counted using a sperm analysis, and testosterone levels is determined from the results of its absorbance at ELISA. The analysis of the test data used One Way Anova and Post Hoc LSD. The correlation between testosterone levels and the concentration of spermatozoa is analyzed using pearson correlation test.

**Results:** The Results of the study showed that a mean concentration of spermatozoa and testosterone levels respectively in the control group (x106/ml 110.57 & 170.2 ng/dL), the dose of 250 mg/200gBB (x106/ml 102.43 & 148.71 ng/dL), the dose of 500 mg/200gBB (x106/ml & 91.00 104.14 ng/dL), and a dose of 1000 mg/200gBB (85.00 x106/ml & 74.28 ng/dL). The results of the analysis of One Way Anova showed the differences of meaning in at least two groups of data  $p = 0.000$  ( $p < 0.05$ ). Test result Post Hoc LSD shows the difference is meaningful in all groups. The Pearson correlation test results indicate the presence of correlation  $P = 0.000$  ( $p < 0.05$ ) with very high level  $p = 0,972$ .

**Conclusion:** The conclusion of this research is the awarding of flaxseed may decrease testosterone levels and the concentration of spermatozoa of white male rats (*Rattus novegicus*).

**Keywords:** *Flaxseed (Linum usitatissimum L.)*, Testosterone Level, Sperm Concentration, *Phytoestrogen*, *Lignan*.

## ABSTRAK

Penganut gaya hidup vegetarian di Indonesia meningkat setiap tahunnya. Tanaman yang sedang digemari dalam kalangan vegetarian adalah biji *flaxseed*. *Flaxseed* mengandung senyawa *phytoestrogen* yang memiliki struktur seperti steroid dan dapat menghambat spermatogenesis. Proses spermatogenesis yang terganggu menyebabkan penurunan kuantitas sperma. Tujuan penelitian ini untuk mengetahui pengaruh pemberian *flaxseed* terhadap konsentrasi spermatozoa tikus.

Penelitian eksperimental dengan rancangan *post test only control group design* menggunakan sampel 28 ekor tikus jantan (*Rattus norvegicus*) yang diadaptasi selama 7 hari, dibagi menjadi kelompok kontrol dan kelompok perlakuan pemberian *flaxseed* dosis 250 mg/200gBB, 500 mg/200gBB, 1000 mg/200gBB. Penelitian dilakukan di Laboratorium Pusat Studi Pangan dan Gizi UGM selama 48 hari. Konsentrasi spermatozoa dihitung menggunakan analisis sperma, dan kadar testosteron ditentukan dari hasil absorbansinya pada ELISA. Analisis data yang digunakan uji *One Way Anova* dan *Post Hoc LSD*. Korelasi kadar testosteron dan konsentrasi spermatozoa dianalisis menggunakan uji *pearson correlation*.

Hasil penelitian menunjukkan rerata konsentrasi spermatozoa dan kadar testosteron secara berurutan pada kelompok kontrol ( $110,57 \times 10^6/\text{ml}$  &  $170,2 \text{ ng/ml}$ ), kelompok dosis 250 mg/200gBB ( $102,43 \times 10^6/\text{ml}$  &  $148,71 \text{ ng/ml}$ ), kelompok dosis 500 mg/200gBB ( $91,00 \times 10^6/\text{ml}$  &  $104,14 \text{ ng/ml}$ ), dan kelompok dosis 1000 mg/200gBB ( $85,00 \times 10^6/\text{ml}$  &  $74,28 \text{ ng/ml}$ ). Hasil analisis *One Way Anova* menunjukkan perbedaan bermakna paling tidak pada dua kelompok data  $p=0,000$  ( $p<0,05$ ). Hasil uji *Post Hoc LSD* menunjukkan perbedaan bermakna pada semua kelompok. Hasil uji *Pearson correlation* menunjukkan adanya korelasi  $P=0,000$  ( $p<0,05$ ) dengan tingkat keeratan sangat tinggi  $p=0,972$ .

Kesimpulan penelitian ini adalah pemberian *flaxseed* dapat menurunkan kadar testosteron dan konsentrasi spermatozoa tikus putih jantan (*Rattus novegicus*).

**Kata kunci :** *Flaxseed* (*Linum usitatissimum* L.), Kadar Testosteron, Konsentrasi spermatozoa, *Phytoestrogen*, *Lignan*.