

**EFEK PEMBERIAN VITAMIN C TERHADAP KADAR  
HORMON TESTOSTERON SERUM, JUMLAH DAN  
MORFOLOGI SPERMATOZOA *Rattus norvegicus*  
STRAIN WISTAR ALBINO YANG  
DIINDUKSI GENTAMISIN**

**TESIS**



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**Efek Pemberian Vitamin C Terhadap Kadar Hormon Testosteron Serum,  
Jumlah dan Morfologi Spermatozoa *Rattus norevegicus* Strain Wistar Albino  
yang Diinduksi Gentamisin**

**ABSTRAK**

Gentamisin merupakan antibiotik golongan aminoglikosida yang dapat mengakibatkan peningkatan ROS dan menurunkan cadangan antioksidan yang menyebabkan rusaknya sel testis, dapat menghambat pembelahan sel germinal testis dan sintesis protein, serta mempengaruhi produksi hormon testosteron yang dapat mempengaruhi kualitas spermatogenesis. Vitamin C sebagai antioksidan dapat menangkal ROS sehingga sel testis dapat diperbaiki. Penelitian ini bertujuan untuk melihat efek pemberian vitamin C terhadap kadar hormon testosteron serum, jumlah, dan morfologi spermatozoa *rattus norvegicus* strain wistar albino yang diinduksi gentamisin.

Penelitian ini merupakan penelitian *eksperimental* menggunakan *post test only control group design*. Sebanyak 25 ekor tikus jantan yang dibagi menjadi 5 kelompok. Kelompok kontrol negatif (KN) diberi diet standar, kelompok kontrol positif (KP) diinduksi gentamisin 5mg/kgbb selama 10 hari pertama, kelompok perlakuan (P) 1, 2 dan 3 diberi diet standar dan diinduksi gentamisin 5 mg/kgbb selama 10 hari pertama dan pada hari 11-51 diberi vitamin C dengan dosis 1,6 mg; 2,25 mg; 4,5 mg, berturut-turut. Pada hari ke-52 dilakukan pemeriksaan kadar hormon testosteron serum dengan ELISA, jumlah spermatozoa dihitung dengan *haemositometer*, morfologi spermatozoa diperiksa dengan menggunakan *eosin* yang kemudian diamati dibawah mikroskop digital. Data dianalisis menggunakan *One Way Anova* dan *Kruskal Wallis* dilanjutkan dengan uji *post hoc* dan uji *Mann-Whitney*.

Hasil penelitian menunjukkan rerata kadar hormon testosteron serum pada kelompok KN 0,346 ng/ml, KP 0,245 ng/ml, P1 0,883 ng/ml, P2 0,882 ng/ml, P3 0,037 ng/ml. Jumlah spermatozoa pada kelompok KN 41,68 juta/ml, KP 21,06 juta/ml, P1 52,92 juta/ml, P2 57,12 juta/ml, P3 50,73 juta/ml dan morfologi spermatozoa KN 74,12%, KP 45,84%, P1 58,82, P2 68,68%, P3 78,72%.

Dari hasil penelitian ini disimpulkan bahwa pemberian vitamin C pada *Rattus norevegicus Strain Wistar Albino* berpengaruh secara signifikan terhadap kadar hormon testosteron serum, dan kualitas spermatozoa (jumlah dan morfologi spermatozoa) yang diinduksi gentamisin.

**Kata Kunci :** Gentamisin, Spermatozoa, Testosteron, Vitamin C.

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**Effect of Vitamin C on Testosterone Level, Sperm Count and Sperm Morphology  
in Developing *Rattus norvegicus* Strain Wistar Albino of Gentamicin-induced**

**ABSTRACT**

Gentamicin is an aminoglycoside-class antibiotic that can lead to an increase in ROS and decrease antioxidant reserves that cause destruction of testicular cells that are known to inhibit cell division in testicular germ cells and protein synthesis in the testes as well as affect the production of testosterone that affects the quality of spermatogenesis. Vitamin C as an antioxidant can counteract ROS so that testicular cells can be repaired. This study aimed to examine the effects of vitamin C on serum testosterone levels, quantities and morphology of gentamicin-induced *rattus norvegicus* strains of wistar albino strains.

This study was an experimental research with post tests only control group design on 25 male rats, 2-3 aged months, weight 160-240 g. Animals were divided into 5 groups. Negative control group only fed a standart diet, positive control fed a standart diet and induced gentamicin 5mg / kgbb for the first 10 days, and 3 treatment fed a standart diet and induced gentamicin 5mg / kgbb for the first 10 days and at days 11-51 were given vitamin C at a dose of 1.6mg; 2.25mg; 4.5 mg. On 52 day, all of wistar rats perform terminated for analyzed the testosterone levels were by ELISA, sperm count was calculated with then haemocytometer observed with digital microscope, morphology of spermatozoa was analyzed by eosin staining and was observed with digital microscope. Data were analyzed by One Way Anova and Kruskall Wallis followed by Post Hoc test and Mann-Whitney test to see between groups difference.

Results of this study showed that the average of testosterone serum on control negatif group of 0.346 ng/ml, control positif 0.245 ng/ml, treatment 1 is 0.883 ng/ml, treatment 2 is 0.882 ng/ml, and traetment 3 is 0.037 ng/ml. Sperm count on control negatif 41.68 million/ml, control positif 21.06 million/ml, treatment 1 is 52.92 million/ml, treatment 2 is 57.12 million/ml, treatment 3 is 50.73 million/ml and sperm morphology on control negative 74.12%, control positif 45,84%, treatment 1 is 58,82, treatment 2 is 68,68%, and treatment 3 is 78,72%.

It is concluded that vitamin C has significant effect on increasing testosterone level and sperm quality in gentamicin induced developing wistar albino rat.

**Keywords:** Gentamicin, Spermatozoa, Testosterone, Vitamin C.