

**PENGARUH VARIASI PEMBERIAN TEMPE GEMBUS  
TERHADAP KADAR HOMOSISTEIN DAN  
MALONDIALDEHID SERUM TIKUS *Sprague dawley* YANG  
DIBERIKAN DIET ATEROGENIK**

***EFFECTIVENESS OF TEMPE GEMBUS, AN INDONESIA FERMENTED  
FOOD, AGAINST LEVEL OF HOMOCYSTEINE AND  
MALONDIALDEHYDE ON ATHEROGENIC RAT MODEL***



**Tesis**

**Untuk memenuhi sebagian persyaratan  
mencapai derajat S2**

**Magister Ilmu Gizi**

**Ratih Kurniasari  
22030115410003**

**FAKULTAS KEDOKTERAN  
UNIVERSITAS DIPONEGORO  
SEMARANG**

**Maret  
2017**

**PENGARUH VARIASI PEMBERIAN TEMPE GEMBUS TERHADAP KADAR  
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**ABSTRAK :** Diet aterogenik meningkatkan risiko aterosklerosis, yang merupakan proses awal terjadinya penyakit jantung koroner dan stroke sehingga menyebabkan peningkatan risiko kematian. Tempe gembus sesuai *food as medicine* diketahui mengandung isoflavon, serat, dan PUFA yang mempengaruhi parameter aterosklerosis. Penelitian bertujuan untuk membuktikan pengaruh variasi pemberian tempe gembus tanpa perlakuan tambahan (X1), dengan *steam blanching* (X2), dan ditambahkan enzim bromelin (X3) terhadap kadar homosistein dan malondialdehid serum tikus *Sprague dawley* yang diberikan diet aterogenik.

**Metode :** Penelitian *post test randomized controlled group design* pada 35 ekor tikus dibagi menjadi 2 kelompok kontrol (K – dan K +) dan 3 kelompok perlakuan (X1, X2, X3) yang diberikan gembus 25 gram/kg berat badan. Homosistein diukur dengan metode ELISA sedangkan MDA dengan TBARS. Dilakukan uji statistik *one way* Anova dan Post hoc.

**Hasil :** Rerata kadar homosistein serum kelompok K- [3.98±0.58], K+ [4.30±0.37], X1 [4.19±1.15], X2 [4.28±1.04], dan X3 [3.73±1.15] µmol/mL dengan p Anova = 0.751. Rerata kadar MDA serum kelompok K- [16.37±0.69], K+ [21.91±2.71], X1 [15.49±1.53], X2 [20.50±3.09], dan X3 [17.18±1.16] nmol/mL dengan p Anova = 0.001. Uji Post Hoc menyatakan X3 dan X1 lebih bermakna dibandingkan X2 terhadap kadar MDA.

**Simpulan :** Variasi tempe gembus dapat menurunkan kadar MDA secara bermakna tetapi tidak dapat membuktikan penurunan kadar homosistein secara bermakna.

**Katakunci :** Tempe gembus, tikus aterogenik, homosistein, malondialdehid

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**ABSTRACT:** Atherogenic diet causes hyperlipidemia that increases the risk of atherosclerosis. Atherosclerosis is a beginning process of coronary heart disease and stroke which the fatality is estimated increasing. Based on *food as medicine* concept, *tempe gembus* (an fermented food from Indonesia) is well known having the content of nutrient that influences atherosclerosis parameter. Research aimed to prove the influence of giving variation of *tempe gembus* was given without additional treatment (X1), with the steam blanching heating (X2), and was added the bromelain enzyme (X3) to the level of homocysteine and malondialdehyde of *Sprague Dawley* rat's blood that was given the atherogenic diet.

**Methods:** The research design of *posttest randomized controlled group design* on 35 *Sprague dawley* rats that were divided into 2 control groups (K – and K + ) and 3 treatment groups (X1, X2, X3) that were given *tempe gembus* of 25 gram/ kg rat body weight. Homocysteine is measured by ELISA, while MDA by TBARS. It was done the one way Anova and Post hoc test.

**Result:** Mean of serum homocysteine level of K- [3.98±0.58], K+ [4.30±0.37], X1 [4.19±1.15], X2 [4.28±1.04], and X3 [3.73±1.15] µmol/mL with the p value = 0.751. Mean of serum MDA level of K- [16.37±0.69], K+ [21.91±2.71], X1 [15.49±1.53], X2 [20.50±3.09], dan X3 [17.18±1.16] nmol/mL with p value = 0.001. Treatment X1 and X3 had meaningful differences to decrease the MDA levels (Post hoc test p<0.05).

**Conclusion:** *Tempe gembus* variation can decrease the MDA level significantly and decrease the homocysteine level although statistically meaningless.

**Keywords:** *Tempe gembus*, atherogenic rat, homocysteine, malondiadehyde