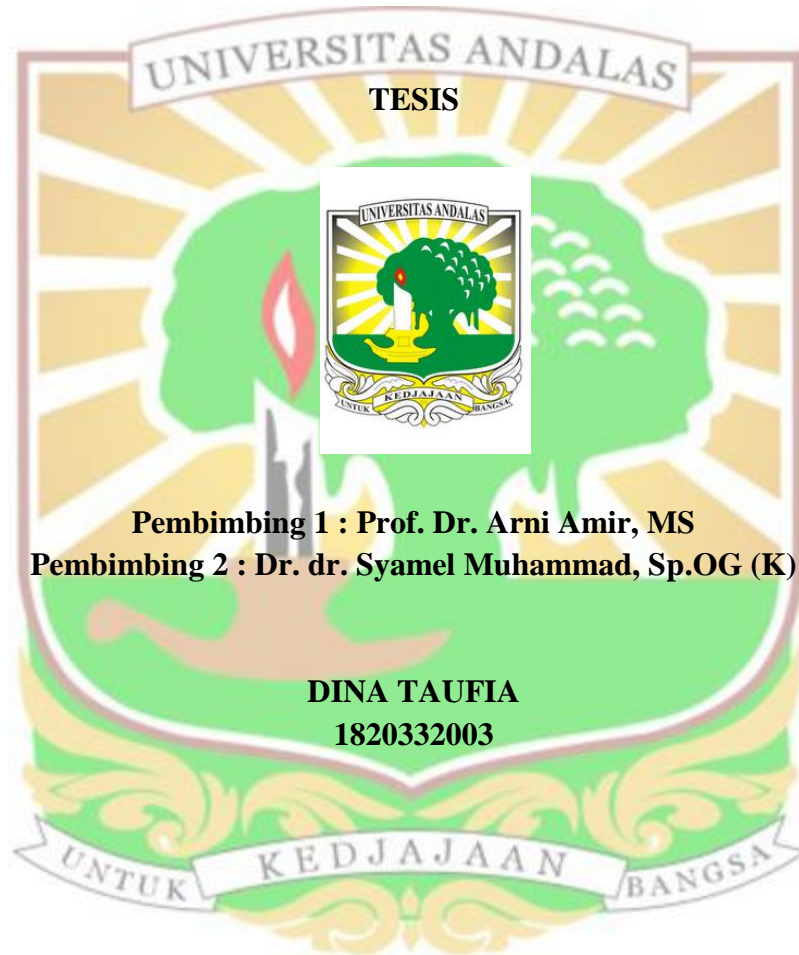


**PENGARUH PEMBERIAN OMEGA-3 DAN VITAMIN E
TERHADAP KADAR *REACTIVE OXYGEN SPECIES* (ROS)
DAN *NITRIC OXIDE* (NO) PADA TIKUS PUTIH (*RATTUS
NORVEGICUS*) BUNTING MODEL PREEKLAMPSIA**



**Pembimbing 1 : Prof. Dr. Arni Amir, MS
Pembimbing 2 : Dr. dr. Syamel Muhammad, Sp.OG (K)**

**DINA TAUFIA
1820332003**

**PROGRAM STUDI S2 ILMU KEBIDANAN
PASCASARJANA FAKULTAS KEDOKTERAN
UNIVERSITAS ANDALAS
PADANG
2021**

**PENGARUH PEMBERIAN OMEGA-3 DAN VITAMIN E
TERHADAP KADAR *REACTIVE OXYGEN SPECIES* (ROS)
DAN *NITRIC OXIDE* (NO) PADA TIKUS PUTIH (*RATTUS
NORVEGICUS*) BUNTING MODEL PREEKLAMPSIA**



**PROGRAM STUDI S2 ILMU KEBIDANAN
PASCASARJANA FAKULTAS KEDOKTERAN
UNIVERSITAS ANDALAS
PADANG
2021**

ABSTRAK
PENGARUH PEMBERIAN OMEGA-3 DAN VITAMIN E
TERHADAP KADAR *REACTIVE OXYGEN SPECIES* (ROS)
DAN *NITRIC OXIDE* (NO) PADA TIKUS PUTIH (*RATTUS*
***NORVEGICUS*) HAMIL MODEL PREEKLAMPSIA**

DINA TAUFIA

Preeklampsia merupakan penyakit dengan berbagai teori. Menurut teori stress oksidatif, preeklampsia bermula dari kegagalan invasi trofoblas saat proses implantasi, sehingga menyebabkan hipoksia atau iskemia plasenta yang selanjutnya menyebabkan kerusakan sel termasuk disfungsi sel endotel plasenta. Suplementasi omega-3 dan vitamin E sebagai salah satu upaya penting dalam pencegahan preeklampsia. Asam lemak omega-3 memainkan peran penting dalam proses implantasi, plasentasi, serta proses antiinflamasi. Sementara vitamin E merupakan antioksidan larut lemak yang dapat mencegah stress oksidatif, menghambat sitokin proinflamasi dan melindungi asam lemak dari oksidasi. Tujuan penelitian ini adalah untuk mengetahui pengaruh pemberian omega-3 dan vitamin E terhadap kadar ROS dan NO pada tikus hamil model PE.

Penelitian ini dilaksanakan di *Animal House* dan Laboratorium Biomedik Fakultas Kedokteran Universitas Andalas Padang. Penelitian dimulai bulan Agustus 2020-Mei 2021. Jenis penelitian ini adalah eksperimental dengan rancangan *Post Test Only Control Group Design* sampel berjumlah 35 ekor tikus hamil yang dibagi menjadi 5 kelompok. Kelompok K- tanpa perlakuan, kelompok K+ diberi L-NAME, kelompok P1 diberi L-NAME + omega-3, kelompok P2 diberi L-NAME + vitamin E serta kelompok P3 yang diberi L-NAME + omega-3 + vitamin E. Alat ukur keduanya menggunakan spektrofotometer. Data dianalisa dengan menggunakan uji normalitas *Shapiro Wilks*. Setelah uji parametrik terpenuhi maka dilanjutkan uji hipotesa menggunakan *One Way Anova* dan *Post Hoc Test LSD*.

Hasil : rerata kadar ROS pada masing-masing kelompok yakni, K- : 121,684 ng/L, K+ : 143,885 ng/L , P1 : 136,250 ng/L, P2 : 132,433 ng/L dan P3 : 122,993 ng/L. Rerata kadar NO didapatkan K- : 29,502 ng/L, K+ : 26,053 ng/L, P1 : 27,250 ng/L, P2: 27,555 ng/L dan P3: 32,278 ng/L. Hasil analisis *One Way Anova* menunjukkan bahwa pemberian omega-3 dan vitamin E terdapat perbedaan yang bermakna antar kelompok kontrol dan perlakuan terhadap kadar ROS ($p=0,001$), terhadap kadar NO ($p=0,001$).

Kesimpulan : pemberian omega-3, vitamin E, omega-3 plus vitamin E dapat menurunkan kadar ROS pada tikus hamil model preeklampsia. Sementara untuk kadar NO terdapat peningkatan hanya pada pemberian omega-3 plus vitamin E saja.

Kata Kunci : Omega-3, Vitamin E, Stress oksidatif, ROS, NO, Preeklampsia

ABSTRACT

THE EFFECTS OF OMEGA-3 AND VITAMIN E ON REACTIVE OXYGEN SPECIES (ROS) LEVELS AND NITRIC OXIDE (NO) ON PREGNANT RAT (*RATTUS NORVEGICUS*) MODELS WITH PREECLAMPSIA

DINA TAUFIA

Preeclampsia is a disease of theories. According to the oxidative stress theory, preeclampsia stems from the failure of trophoblast invasion during the implantation process, resulting in placental hypoxia or ischemia. This condition in turn causes cell damage including placental endothelial cell dysfunction. Supplementation of omega-3 and vitamin E is considered as one of the important efforts in preventing preeclampsia for the reason that Omega-3 fatty acids play an important role in implantation, placentation and anti-inflammatory processes while vitamin E functions as a fat-soluble antioxidant that can prevent oxidative stress and inhibit the production of proinflammatory cytokines. The purpose of this study was to determine the effect of omega-3 and vitamin E on ROS and NO levels in pregnant preeclampsia model rats.

This research was conducted at the Biomedical Laboratory, Faculty of Medicine, Andalas University, Padang. The study was carried out from August 2020 to May 2021. This type of research was experimental with a post-test only control group design and a sample of 35 pregnant rats. Group K- without treatment, group K+ was given L-NAME, group P1 was given L-NAME + omega-3, group P2 was given L-NAME + vitamin E and group P3 was given L-NAME + omega-3 + vitamin E. Measuring instrument using a spectrophotometer. The data were analyzed using the Shapiro Wilks normality test. Once the parametric test was fulfilled, the hypothesis test is later continued using one way ANOVA and posthoc test LSD.

The results of this study showed the average levels of ROS in each group were K- : 121,684 ng/L, K+ : 143,885 ng/L , P1 : 136,250 ng/L, P2 : 132,433 ng/L and P3 : 122,993 ng/L. The average levels of NO in each group were K- : 29,502 ng/L, K+ : 26,053 ng/L, P1 : 27,250 ng/L, P2: 27,555 ng/L and P3: 32,278 ng/L. The results of the analysis concluded that there were significant differences between the control and treatment groups on ROS levels ($p=0.001$), where in the control group is ($p=0.001$), P1 is ($p=0.001$), P2 is ($p=0.001$), and P3 is ($p=0.001$) 0.001). Likewise for NO levels with a value of ($p = 0.001$), where in the control group is ($p = 0.015$), and P3 is ($p = 0.001$) only.

Therefore, it can be concluded that there was a significant effect in the group given omega-3, vitamin E and omega-3 plus vitamin E for ROS levels. However, the NO levels experienced a significant effect in the administration of omega-3 plus vitamin E.

Keywords: Omega-3, Vitamin E, Oxidative stress, ROS, NO, Preeclampsia