# ABSTRAK

## PENGARUH PEMBERIAN MINYAK IKAN KEMBUNG (*Rastrelliger kanagurta*) SELAMA KEBUNTINGAN TERHADAP EKSPRESI *SYNAPSIN* DI *CEREBRUM* DAN *CEREBELLUM* *Rattus norvegicus* BARU LAHIR

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Nutrisi selama masa kehamilan mempengaruhi perkembangan otak janin disamping stimulasi. Penambahan jumlah sel menunjukkan fungsi sinaps yang baik sehingga dapat dihubungkan dengan kecerdasan manusia. Pesatnya laju sinaptogenesis terjadi pada 1000 hari pertama kehidupan yang bisa dipantau dengan kadar synapsin. Selama ini, nutirisi dan suplementasi omega 3 sangat dianjurkan, yang bisa diganti dengan minyak ikan kembung yang lebih murah, gampang didapat dan mungkin sama baiknya.

Penelitian ini bertujuan menganalisis pengaruh minyak ikan kembung selama kebuntingan terhadap ekspresi *synapsin* di *cerebrum* dan *cerebellum Rattus norvegicus* baru lahir.

Jenis penelitian adalah *true eksperiment* dengan desain *posttest-only control group*. *Rattus norvegicus* bunting usia 2-3 bulan sebanyak 30 ekor dibagi menjadi 3 kelompok, yaitu kelompok kontrol (K1), kelompok minyak ikan kembung (K2), dan kelompok suplemen omega-3 (K3). Penelitian dilakukan di Kandang Hewan Coba dan Laboratorium Patologi, Fakultas Kedokteran Hewan, Universitas Airlangga setelah mendapat ethical clearance dengan metode imunohistokimia dengan pembesaran mikroskop 400x per 5x lapangan pandang.

Rerata ekspresi *synapsin* di *cerebrum* dan *cerebellum* masing-masing 2,710±0,705 dan 2,650±0,392 (K1), 4,250±0,864 dan 3,900±0,812 (K2), dan 3,470±0,540 dan 3,340±0,472 (K3). Uji ANOVA menunjukkan terdapat pengaruh signifikan ekspresi *synapsin* di *cerebrum* dan *cerebellum Rattus norvegicus* baru lahir antar kelompok dengan p=0,000 pada *cerebrum* dan p=0,000 pada *cerebellum*. Sehingga dapat ditarik kesimpulan bahwa ekspresi *synapsin* di *cerebrum* dan *cerebellum Rattus norvegicus* baru lahir yang diberi minyak ikan kembung pada induk *Rattus norvegicus* selama kebuntingan lebih tinggi dibandingkan perlakuan lain.

**Kata Kunci**: Minyak ikan kembung, cerebrum, cerebellum, ekspresi *synapsin*, *Rattus norvegicus*

## ABSTRACT

### THE EFFECT OF GIVING MACKEREL (*Rastrelliger kanagurta)* OIL DURING PREGNANCY ON SYNAPSIN EXPRESSION IN THE CEREBRUM AND CEREBELLUM OF NEWBORN *Rattus norvegicus*

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Nutrition during pregnancy affects fetal brain development in addition to stimulation. The increase in the number of cells indicates a good synapse function so that it can be linked to human intelligence. The rapid rate of synaptogenesis occurring in the first 1000 days of life can be monitored with synapsin. Nutrition and omega 3 supplementations have been highly recommended, which can be replaced with mackerel oil which is cheaper, easier to obtain, and perhaps just as good. This study aims to analyze the effect of mackerel oil during pregnancy on synapsin expression in the cerebrum and cerebellum of newborn *Rattus norvegicus*.

This type of research is a true experiment with a posttest-only control group design. 30 pregnant *Rattus norvegicus* aged 2-3 months were divided into 3 groups, namely the control group (K1), the mackerel oil group (K2), and the omega-3 supplement group (K3). The research was conducted at the Experimental Animal Cages and Pathology Laboratory, Faculty of Veterinary Medicine, Airlangga University after receiving ethical clearance. Immunohistochemical staining with microscope magnification 400x per 5x field of view.

There were no experimental animals that experienced abortion, IUGR, disabilities, and died. The mean synapsin expression in the cerebrum and cerebellum was 2,710±0,705 and 2,650±0,392 (K1), 4,250±0,864 and 3,900±0,812 (K2), and dan 3,470±0,540 and 3,340±0,472 (K3), respectively. ANOVA test showed that there was a significant effect of synapsin expression in the cerebrum and cerebellum of newborn *Rattus norvegicus* between groups with p= 0.026 in the cerebrum and p= 0.034 in the cerebellum. So it can be concluded that synapsin expression in the cerebrum and cerebellum of newborn *Rattus norvegicus* fed mackerel oil in *Rattus norvegicus* mother during pregnancy was higher than other treatments.


**Keywords:** Mackerel oil, cerebrum, cerebellum, synapsin expression, *Rattus norvegicus*