SUMMARY

Ramadhana Yoga Prabawa. The Effect of Folic Acid as Additional Therapy of Spiramycine on Physical Defect Risk of Foetus to *Toxoplasma gandii*-Infected Pregnant Mice (*Mus Musculus)*. This research was conducted under the supervision of Suzanita Utama, drh., M.Phil. Ph.D. as supervisor Prof. Dr. Setiawan Koesdarto, drh., M.Sc. as co-supervisor.

Toxoplasmosis is well-known as zoonotic diseases that very dangerous for foetus when infected pregnant mother, it could cause various pregnancy problems. Such patients may have spontaneous abortions, stillbirth, intrauterine growth retardation, preterm deliveries or fetal anomalies (Malik, *et al*. 2014). *Toxoplasma gondii* that reaches the foetus can inhibit nutrient intake, especially folic acid and amino acids from the parent to the child so that it can be a factor in the low body weight and body length of the mouse foetus. *Toxoplasma gondii* given to pregnancy can cause hypoxia (Sinar, 2016). Low oxygen in the blood causes the inhibition of nutrient intake from the maternal to the foetus and could causes barrier of fetal growth development (Lu *et al*., 1999).

Folic acid is very important for fetal development. Folic acid is an element of the formation of 3 nucleotides, namely thymidine, adenine and guanine which are components of DNA needed for cell formation due to their role in DNA synthesis. The necessity of folic acid will continue to increase during tissue growth on pregnancy; folate-dependent processes include increasing the mass of red blood cells, enlarging the uterus and growing the

placenta and foetus (Katalin *et al*., 2012). Folate is also a substrate for a variety of reactions that affect the metabolism of several amino acids, including the transmethylation and transsulfuration pathways (Scholl and Johnson, 2000).

The experimental unit used in this study are 20 female pregnant mice (*Mus musculus*), BALB/c strain, which is 3-4 months old, divided into four groups. The examination result obtained from each treatment groups of C- (administration of 0.5 ml aquadest), C+ (administration of 0.5 ml aquadest), T1 (administration of 130mg/kg BW spiramycine and 0.052 µg/g BW folic acid) and T2 (administration of 0.052 µg/g BW folic acid). C+, T1, and T2 were infected by *Toxoplasma gondii* at12th day of pregnancy. Experimental groups received the treatments for 5 days and began at 13th day of pregnancy, then animals of each groups were sacrificed. The data of foetus physical defect were obtained from mice at 18th day of pregnancy. Mice foetuses were collected for the preparation of physical defect observation. Data analyzed by Kruskal Wallis test using *Statistic Package for the Social Science* (SPSS) 23.0 program

Based on the results of the research, it could be concluded that the addition of folic acid as addition therapy of spiramycine affected in the physical defect risk of foetus to *Toxoplasma gondii*-infected pregnant mice. Folic acid could be reduced the physical defect risk of foetuses which were infected by *Toxoplasma gondii*.

THE EFFECT OF FOLIC ACID AS ADDITIONAL THERAPY OF SPIRAMYCINE ON PHYSICAL DEFECT OF FOETUS TO *Toxoplasma gondii* – INFECTED PREGNANT MICE (*Mus musculus*)

Ramadhana Yoga Prabawa

ABSTRACT

This research aimed to investigate the effect of folic acid as additional therapy of spiramycine on physical defect risk of foetus to *Toxoplasma gondii*-infected pregnant mice (*Mus musculus*). Twenty pregnant female mice were divided into four groups as C -, C +, T1 and T2. C +, T1 and T2 were infected by *Toxoplasma gondii*. C – and C + administered orally 0.5 ml aquadest, T1 administered orally 130 mg/kg BW spiramycine and 0.052 µg/g BW folic acid and T2 administered orally 0.052 µg/g BW folic acid. Experimental groups received the treatments for 5 days, then mice of each groups were sacrified. Foetuses were dissected out for observation. The physical defects of foetuses were measured. The data physical defect of foetuses was presented. From this study, the physical defects of foetuses from the pregnant mice of T1 and T2 have difference compared with the controls. The result of this research is folic acid affects the physical defect risk of foetuses to *Toxoplasma gondii*-infected pregnant mice.

Keywords : folic acid, *Toxoplasma gondii*, *Mus musculus*, foetus, defect