RINGKASAN

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Infeksi *Toxoplasma gondii* strain RH pada mencit dapat menyebabkan kerusakan jaringan dan terbesar adalah hepar. Kerusakan hepar tersebut meliputi apoptosis dan nekrosis. Kerusakan pada hepar yang menyebabkan kematian pada mencit. Pengobatan dan pencegahan selama ini belum memberikan hasil yang maksimal. Pemanfaatan IgY anti-membran diharapkan dapat memberikan perlindungan terhadap infeksi yang berakibat pada apoptosis sel hepar. Mordue *et al* (2001) Apoptosis sel hepar mungkin disebabkan produksi berlebih dari sitokin proinflamasi. Sitokin-sitokin tersebut adalah IL-18, IL-2, IFN γ dan TNF-α. Disamping itu mitokondria yang terinfeksi akan menghasilkan ROS yang toksik terhadap sel sekitarnya dan dapat menyebabkan apoptosis Guacciardi *et al* (2005). Suwanti dkk (2011) berhasil memproduksi IgY anti-membran *Toxoplasma gondii.*

Penelitian ini bertujuan untuk mengetahui pengaruh dan efektivitas pemberian IgY anti-membran *T.gondii* terhadap indeks apoptosis sel hepar mencit (*Mus musculus*) antara kelompok yang diberi IgY anti-membran *T.gondii* satu hari sebelum, bersamaan dan dua hari setelah infeksi *T.gondii*. Lima perlakuan dengan lima ulangan pada tiap-tiap perlakuan digunakan dalam penelitian ini. Pembagian kelompok perlakuan yaitu kelompok P0 (tidak diinfeksi maupun tidak diberi IgY anti-membran), P1 (diinfeksi), Perlakuan 2 (P2) diberi IgY anti-membran 1 hari sebelum infeksi, Perlakuan 3 (P3) diberi IgY anti-membran bersamaan dengan infeksi dan Perlakuan 4 (P4) diberi IgY anti-membran 2 hari setelah infeksi dengan dosis 75µg/ekor untuk IgY anti-membran dan 10 takizoit/ekor untuk dosis infeksi *T.gondii*. Penelitian termasuk eksperimental laboratories menggunakan mencit (*Mus musculus*) strain BALB/C betina dengan umur 2-3 bulan yang telah dikawinkan serentak sebagai hewan coba penelitian. Empat hari pasca infeksi mencit dikurbankan untuk

dilakukan pengamatan dan penghitungan indeks apoptosis dengan menggunakan Apoptotic kit Apoptag ® plus peroxidase In Situ (Chemicon ® International, 57101).

Hasil penelitian menunjukkan bahwa terdapat perbedaan yang nyata (P<0,05) antara kelompok perlakuan (P2, P3, P4) dengan kelompok P1. Kelompok P2 memiliki peresentas 6.06%, P3 7,73%, dan P4 10,49% sedangkan P1 12,98%. Persentase kelompok perlakuan lebih rendah dibanding kelompok P1. Hal ini menunjukkan IgY anti-membran mampu menurunkan indeks apoptosis sel hepar. Diantara ketiga kelompok yang diberi IgY anti-membran *T.gondii* yaitu kelompok P2, P3 dan P4 memiliki perbedaan persentase indeks apoptosis hepar yang tidak berbeda nyata (p<0.05), dimana kelompok P2 dan P3 memiliki persentase yang rendah dibanding dengan kelompok P4.

Kesimpulan dari penelitian ini bahwa pemberian antibody IgY anti-membran *T.gondii* dapat menurunkan indeks apoptosis sel hepar dan paling besar bila diberikan sebelum dan bersama infeksi.

SUMMARY

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The influence of the provision of anti-membrane immunoglobulins Y (IgY) *Toxoplasma gondii* against hepatic cell apoptotis index in mice *(Mus musculus)* were infected *Toxoplasma gondii*

Infection of RH strain *Toxoplasma gondii* in mice may lead to tissue damages and the most severe was the liver. These liver damages include apoptosis and necrosis. The damages in the liver was causes the death of mice. Treatment and prevention has not been providing the maximum result. IgY anti-membrane utilization is expected to provide protection against infection that resulting in liver cell apoptosis. Mordue *et al* (2001) Apoptosis of liver cells may be due to the overproduction of proinflammatory cytokines. These cytokines are IL-18, IL-2, IFN γ and TNF-α. Besides that the infected mitochondria will produce ROS that toxic to surrounding cells and can lead to apoptosis (Guacciardi *et al*, 2005). Suwanti *et al* (2011) succeeded in producing anti-membrane IgY *Toxoplasma gondii.*

This study aimed to determine the effect and effectiveness of the provision of anti-membrane IgY *T.gondii* against hepatic cells apoptosis index of mice (*Mus musculus*) between the group that given anti-membrane IgY *T.gondii* in one day before, simultaneously and two days after infection of *T.gondii.* Five treatments with five replicates in each treatment are used in this study. Distribution of the treatment group that are P0 group (not infected nor given anti- membrane IgY), treatment 1 (P1) infected, Treatment 2 (P2) was given anti- membrane IgY in 1 day before infection, Treatment 3 (P3) was given anti-membrane IgY simultaneously with infection and Treatment 4 (P4) was given anti-membrane IgY in 2 days after infection, with a dose of 75 µg/head for anti-membrane IgY and 10 takizoit/head for *T.gondii* infectious dose. This research including laboratories experimental that using mice (*Mus musculus*) strain of BALB/C female with ages 2-3 months who have mated simultaneously as a research animal. Four days post-infection, then, the mice were sacrificed for observation and counting of apoptotic index by using apoptotic kit Apoptag ® plus peroxidase in situ (Chemicon ® International , 57101).

The results showed that there were significant differences (P<0.05) between treatment groups with the P1 group where the percentage of the treatment group (P2, P3, P4) was lower than the P1group. The group P2 have percentage 6,06%, P3 was 7,73% and P4 was 10.49% whereas P1 have percentage 12,98%. This shows that the anti-membrane IgY can reduce liver cell apoptosis index. From the three treatment groups were given anti-membrane IgY, treatment group 2 (P2) and P3 have low percentage liver cell apoptosis index between treatmen 4 (P4).

The conclusion of this study that the administration of *T.gondii* IgY anti-membrane antibody can reduce liver cell apoptosis index and it was greatest when given before and simultaneously with infection.