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RESPONSE OF SERUM IGG TOWARD CHALLENGE OF *PASTEURELLA MULTOCIDA* B: 2 IN PRIMED WHITE RATS

By

Mohd Firdaus bin Nawi

Research Report submitted in partial fulfillment of
the requirement for the degree of Bachelor of
Science (Biological Sciences)

Department of Biological Sciences
Faculty of Science and Technology
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: RESPONSE OF SERUM IGG TOWARD CHALLENGE OF *PASTEURELLA MULTOCIDA* B:2 IN PRIMED WHITE RATS, oleh Mohd Firdaus bin Nawi, no. matrik: UK 8243 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Biologi), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATIONS

µL	Micron liter
HS	Hemorrhagic Septicemia
g/ml	gram per milliliter
HAS	Human serum albumin
TMB	Tetrametilbenzine
ELISA	Enzyme Linked Immunosorbant Assay
>	More than
<	Less than
IgA	Immunoglobulin A
IgD	Immunoglobulin D
IgE	Immunoglobulin E
IgG	Immunoglobulin G
IgM	Immunoglobulin M
° C	Degree Celcius
ml	Milliliter
rpm	Rotation Per Minute
BHI	Brain Heart Infusion
%	percent
CD4	Cluster of Differentiation 4
BCR	B cell receptor

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ABSTRACT

The objective of study the development of serum IgG following inoculation of dust preparation of *Pasteurella multocida* type B2 in white rats is to know the level of serum IgG as a response after inoculated with lyophilized crude. 18 clinically white rats were divided into six groups, where group A, B and C were control (untreated) and group D, E and F was administrated with lyophilized crude (treated). Group A was control group for group D, group B for group E and group C for group F. The experimental starts on day-14 on pre-treatment before going to the D-day where the rats from treated groups (D, E and F) were exposed to the lyophilized crude. Then, the treated group rats were exposed to the lyophilize crude again which 2 weeks interval for group D, 3 weeks interval for group E and 4 weeks interval for group F. A week after second exposure, the rats (includes control group rats) were challenged with live bacteria. The serum were collected from each white rat every weeks starting from day-14 of pre-treatment till the end of experiment and tested by Enzyme-linked Immunosorbant Assay (ELISA) machine. The result shows that the level of serum IgG from day-0 to day-14 was higher in treated groups with 0.1136 in average than control (untreated) with 0.0625. There was no significant difference ($p > 0.05$) between groups of individual and there was significant difference ($p < 0.05$) between groups of experiment. By using the T-test, group A was compared with D, group B was compared with group E, group C was compared with group F and there were significant difference ($p < 0.05$) among them.

TINDAKBALAS SERUM IGG TERHADAP PENDEDAHAN *PASTEURELLA MULTOCIDA* B:2 PADA TIKUS PUTIH YANG TELAH DIVAKSINKAN

ABSTRAK

Objektif kajian ini adalah untuk mengukur paras serum IgG sebagai tindakbalas selepas inokulasi serbuk *Pasteurella multocida* B:2 yang tidak ditapis pada bahagian intranasal tikus. Sebanyak 18 ekor tikus putih yang sihat dibahagikan kepada enam kumpulan; A, B dan C sebagai kumpulan kawalan tanpa sebarang rawatan, manakala D, E dan F dirawat dengan serbuk *P. m* B:2. Kumpulan A sebagai kawalan kepada kumpulan D, B kepada E, dan C kepada F. Eksperimen bermula pada hari ke-14 selepas tempoh pra-rawatan, sebelum hari 0 untuk tempoh rawatan bermula, di mana tikus dalam kumpulan rawatan (D, E, F) diberi serbuk *P. m* B:2. Kemudian, kumpulan rawatan diberi serbuk *P. m* B:2 sekali lagi, selepas 2 minggu untuk kumpulan D, selepas 3 minggu untuk kumpulan E, dan selepas 4 minggu untuk kumpulan F. Seminggu selepas rawatan ke-2, semua tikus didedahkan kepada bakteria hidup. Serum setiap ekor tikus dikumpulkan pada setiap minggu bermula dari hari ke-14 pra-rawatan sehingga hari akhir eksperimen dan serum diuji dengan mesin ELISA. Keputusan menunjukkan paras serum IgG dari hari 0 hingga hari ke-14 sangat tinggi dalam kumpulan rawatan dengan purata 0.1136 berbanding purata kumpulan kawalan iaitu 0.0625. Tiada perbezaan ketara ($p > 0.05$) di antara kumpulan individu tetapi terdapat perbezaan ketara ($p < 0.05$) di antara kumpulan eksperimen. Dengan menggunakan ujian T, kumpulan A dibandingkan dengan kumpulan D, kumpulan B dengan kumpulan E, dan kumpulan C dengan F, dan didapati terdapat perbezaan ketara ($p < 0.05$) di antara semua kumpulan.