

EFFECTS SERUM 199 IN WHITE RATS VACCINATED
WITH KILLED *Pasteurella multocida* B:2

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**EFFECTS SERUM IGG IN WHITE RATS VACCINATED WITH KILLED
Pasteurella multocida B2 ORALLY**

By
Sangeetha a/p Raman

A thesis submitted in partial fulfillment of
the requirements for the award of the degree of
Bachelor of Science (Biological Sciences)

**DEPARTMENT OF BIOLOGICAL SCIENCES
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PENGAKUAN DAN PENGESAHAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **EFFECTS SERUM IGG IN WHITE RATS VACCINATED WITH KILLED *Pasteurella multocida* B2 ORALLY** oleh **SANGEETHA A/P RAMAN**, No. Matrik: **UK11923** 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, Univrsiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this thesis entitles “Effects Serum IgG in White Rats Vaccinated with Killed *Pasteurella multocida* B:2 Orally” is the result of my own research except as cited in the references.

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ABSTRACT

Pasteurella multocida B:2, a Gram-negative pathogenic bacteria has been recognized as the causative agent of Haemorrhagic septicaemia (HS), a disease that infects cattle and wates buffaloes in the region of Asia. One of the best method to increase the protection against HS is by inducing the production of Immunoglobulin (IgG). Therefore, a study was conducted to determine the concentration of IgG in the serum of white rats following oral exposure of killed *Pasteurella multocida* B2. Thirty-six clinically healthy female Albino Winstar white rats were divided into four groups. White rats in Group 1, Group 2 and Group 3 is subjected to double oral exposure to 10%, 30% and 50% of killed *Pasteurella multocida* B:2 in food pellet respectively. White rats in the Group 4 were the control group which was left unexposed. Serum samples were collected once every week from each group of rats. Enzyme-linked immunosorbent assay (ELISA) was used to measure the IgG titer in the blood serum. As the results, oral vaccination of *Pasteurella multocida* B:2 has induced an immune response to the rats in Group 1 and Group 2 significantly ($p < 0.05$) and Group 3 insignificantly ($p > 0.05$). Neutralization was performed by IgG after second exposure due to IgG titer which was still on the rise when second exposure was made. IgG is long standing and is crucial to obtain satisfactory protection against most infection. It is concluded that oral vaccination has effect on serum IgG after double exposure of *Pasteurella multocida* B:2 to white rats. Further research are recommended to prolong the interval between the two exposures to measure the maximum peak of IgG after oral vaccination with killed *Pasteurella multocida* B:2

ABSTRAK

Pasteurella multocida B2, sejenis bakteri patogenik Gram-negatif yang dikenal pasti sebagai agen penyebab bagi penyakit hawar berdarah yang menjangkiti haiwan ternakan seperti lembu dan kerbau di negara-negara Asia. Salah satu cara terbaik untuk meningkatkan perlindungan terhadap hawar berdarah adalah melalui merangsang penghasilan immunoglobulin G (IgG). Maka, satu kajian telah dijalankan untuk menentukan tahap IgG dalam serum darah tikus putih berikutan pendedahan melalui mulut kepada bakteria *Pasteurella multocida* B2 yang telah dimatikan. Tiga puluh enam tikus putih betina yang sihat dari segi klinikal telah diagihkan sama kepada empat kumpulan. Tikus putih dalam Kumpulan 1,2, dan 3 masing-masing didedahkan dua kali melalui mulut kepada 10%, 30% dan 50% vaksin PMB2 yang telah dimatikan. Kumpulan 4 dijadikan sebagai kawalan. Sampel serum telah dikumpul setiap minggu daripada semua tikus di semua kumpulan. ELISA dijalankan untuk menentukan tahap IgG. Keputusannya, vaksin PMB2 melalui mulut telah merangsang tindakbalas imun terhadap tikus dalam Kumpulan 1,2 secara signifikan ($p < 0.05$) dan Kumpulan 3 secara tidak signifikan ($p > 0.05$). Neutralisasi telah berlaku kepada IgG selepas pendedahan kali kedua. IgG didapati kekal pada masa yang lama dan penting untuk menghasilkan perlindungan yang memuaskan. Kesimpulannya, vaksin melalui mulut ada kesan kepada serum IgG selepas pendedahan kali kedua kepada PMB2 yang telah dimatikan.