EFFECTS ORAL VACCINATION OF KILLED *Pasteurella multocida* B:2 ON BRONCHUS - ASSOCIATED LYMPHOID TISSUE (BALT) IN WHITE RATS

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By

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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:
Effects Oral Vaccination of Killed Pasteurella multocida B:2 on Bronchus-Associated Lymphoid Tissue (BALT) in White Rats oleh **Illazuwa Binti Mohd Yusoff, No.Matrik UK12068** 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, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that this thesis entitled EFFECTS ORAL VACCINATION OF KILLED *Pasteurella multocida* B:2 ON BRONCHUS-ASSOCIATED LYMPHOID TISSUE (BALT) IN WHITE RATS is the result of my own research except as cited in the references.

Signature : .....

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ABSTRACT

Pasteurella multocida is a coccobacillus bacterium that has been recognized as an important animal pathogen and this type of bacteria always exists in the respiratory tract of different animals. Thus, this study was conducted to determine the effects oral vaccination of killed *Pasteurella multocida* B:2 on Bronchus-associated lymphoid tissue (BALT). This study involved with forty-two clinically healthy rats (*Rattus novegicus*) from type Sprague- Dawley that were randomly allocated into two groups. Each group contains 21 rats for the 7 weeks experiment duration. Group 1 was the control untreated group while Group 2 was the treated group. The treated groups were exposed twice with oral vaccination with two week interval and every exposure consists 15g vaccinated pellet with killed *Pasteurella multocida* B:2 for each rat. Then, every week on a designated day, three white rats from the each group were slaughtered to collect the rat's lung samples throughout project for seven weeks. After that, histological works was done to all lung samples to observe bronchus-associated lymphoid tissue (BALT). The results of the study using oral vaccination on the area of BALT and the number of lymphocytes show a very positive response having ($p < 0.01$) between the control and the treatment group. The data analysis was conducted using the ANOVA Two-Factor with Replication. The response between the weeks also shows a significant difference having ($p < 0.05$) in both area of BALT and the number of lymphocytes. Results obtained proved that the BALT response well and the oral vaccination manage to induce immunity towards the *Pasteurella multocida* B:2 in rats.

ABSTRAK

Pasteurella multocida telah dikenalpasti sebagai pathogen haiwan yang utama dan bacteria jenis ini selalu hadir dalam salur pernafasan pelbagai jenis haiwan. Seterusnya, imunisasi mucosal memainkan peranan penting untuk mengatasi mikroorganisma ini.Oleh itu, projek penyelidikan ini telah dilakukan untuk menentukan kesan pengvaksinan *Pasteurella multocida* B:2 yang telah mati secara oral kepada Bronchus-associated lymphoid tissue (BALT). Projek ini melibatkan empat puluh dua ekor tikus putih dari jenis Sprague- dawley yang dibahagikan kepada dua kumpulan. Setiap kumpulan mengandungi dua puluh satu tikus putih untuk tujuh minggu tempoh eksperimen. Kumpulan 1 adalah kumpulan kawalan tanpa sebarang rawatan vaksin manakala kumpulan 2 adalah kumpulan yang dirawat dengan vaksin. Kumpulan yang dirawat telah didedahkan dua kali kepada vaksin *Pasteurella multocida* B:2. secara oral iaitu dalam bentuk pellet makanan sebanyak 15g bagi setiap ekor dengan tempoh dua minggu selang. Seterusnya, setiap minggu pada hari tertentu , tiga ekor tikus putih dari setiap kumpulan akan disembelih dan sampel paru-paru dikumpul sepanjang tempoh tujuh minggu. Kemudian, semua sampel paru-paru diperiksa secara histologi. Daripada keputusan yang diperolehi, didapati keluasan kawasan BALT dan bilangan limposit menunjukkan kesan yang positif terhadap eksperimen ini dengan ($p<0.01$) diantara kumpulan rawatan dan kumpulan kawalan. Analisis ANOVA 2-hala dengan replikasi yang dilakukan menunjukkan kesan perbezaan antara minggu juga adalah bermakna dengan ($p< 0.05$) bagi keluasan BALT dan bilangan limposit. Keputusan yang diperoleh telah membuktikan bahawa pemberian vaksin secara oral telah mengaruh kepada imuniti terhadap *Pasteurella multocida* B:2 dalam tikus kerana BALT telah memberi tindakbalas yang baik.