

IMMUNE RESPONSE OF SERUM IMMUNOGLOBULIN  
(IgG AND IgA) TOWARDS INTRATRACHEAL EXPOSURE OF  
*Dactyloctenium aegyptium* L2 IN GOATS

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IMMUNE RESPONSE OF SERUM IMMUNOGLOBULIN (IgA and IgG)  
TOWARDS INTRATRACHEAL EXPOSURE OF *Pasteurella multocida* B2 IN  
GOATS

By

Fazilah bin Omar

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PENGAKUAN DAN PENGESAHAN LAPORAN  
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: Immune response of serum immunoglobulin (IgA and IgG) towards intratracheal exposure of formalin-killed *Pasteurella multocida* B2 in goats, oleh Fazilah bin Omar, No. Matrik: UK 6414 telah diperiksa dan semua pembedaan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sabahagian daripada keperluan memperoleh ijazah Sarjana Muda Sains Gunaan (Pemuliharaan dan Pengurusan Biodiversiti), Fakulti Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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## LIST OF ABBREVIATIONS

<b>Symbol</b>	<b>Meaning</b>
VRI	Veterinary Research Institute
PBS	Phosphate-buffered Saline
BHI	Brain-heart Infusion
Cfu	Colony-forming unit
<i>et. al</i>	and others
rpm	Round per minute
H <sub>2</sub> SO <sub>4</sub>	Hydrogen peroxide
TMB	Tetra-Methyl Benzedine
ELISA	Enzyme-linked immunosorbent Assay

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## ABSTRACT

A study to determine the immunoglobulin (IgA and IgG) responses in the serum of goats following intratracheal exposure of formalin-killed *Pasteurella multocida* B2 was carried out. There are 6 goats totally, divided into 2 groups which are 3 goats for each group. Group 1 was exposed with formalin-killed *Pasteurella multocida* B2 while goats Group 2 were unexposed control. All goats in Group 1 were exposure to formalin-killed *Pasteurella multocida* B2 through intratracheal at day 0. Serum sample were collected from each group of goat at days 0, 2, 5, 8, 11, and 15. Serum sample also collected 2 weeks before treatment to make sure all goats was free from *Pasteurella multocida* B2 or other species of Pasteurella infection. After last day of treatment at day 15, all goats were slaughtered. ELISA techniques were used to determine the local immunoglobulin (IgA and IgG) in the serum samples. The IgA levels in serum of goat increased rapidly to reach significantly ( $p < 0.05$ ) high level as early as day 2 post- exposure by formalin-killed *Pasteurella multocida* B2. After day 8, the IgA levels started to decline slightly until day 15 post-exposure and significantly ( $p < 0.005$ ) compared to the control unexposed group. The IgG in serum levels increased gradually and insignificant ( $p > 0.05$ ) initially before they reached significantly ( $p < 0.05$ ) high levels at day 5 post-exposure until the end of days post-exposure. The presence of formalin-killed *Pasteurella multocida* B2 using

intratracheal exposure shown that was induced the responses of IgA and IgG in goat's serum.

## TINDAK BALAS IMUN DALAM SERUM KAMBING TERHADAP

### *Pasteurella multocida* B2 SECARA INTRATRAKEA

#### ABSTRAK

Kajian mengenai tindak balas immunoglobulin (IgA dan IgG) di dalam serum kambing dilakukan secara intratrakea yang didedahkan kepada *Pasteurella multocida* B2 yang telah dimatikan oleh formalin. 6 ekor kambing dibahagikan kepada 2 kumpulan dimana setiap kumpulan mengandungi 3 ekor kambing. Kambing dalam kumpulan 1 disuntik dengan *Pasteurella multocida* B2 mati secara intratrakea pada hari 0, dan kambing di dalam kumpulan 2 dijadikan sebagai kawalan. Serum diambil dari setiap kumpulan bermula dari hari 0, 2, 5, 8, 11, dan 15. Sampel serum diambil 2 minggu sebelum suntikan *Pasteurella multocida* B2 mati dilakukan untuk memastikan kambing berada dalam keadaan sihat dan bebas daripada sebarang jangkitan penyakit. Semua kambing disembelih pada hari ke-15. Teknik ELISA digunakan untuk mengenalpasti tahap antibodi (IgA dan IgG) di dalam sampel yang diambil. Tahap IgA serum kambing berlaku peningkatan dengan pantas dan nyata ( $p < 0.05$ ) pada hari ke-2 selepas disuntik oleh *Pasteurella multocida* B2 mati. Selepas hari ke-8, tahap IgA menurun sehingga hari ke-15. Begitu juga dengan tahap IgG di dalam serum kambing iaitu berlaku peningkatan pada hari ke-5 secara nyata ( $p < 0.05$ ) sehingga hari ke-11 sebelum ia menurun sehingga hari ke-15. Kehadiran *Pasteurella*



*multocida* B2 mati secara intratrakea menunjukkan peningkatan antibodi IgA dan IgG di dalam serum kambing.