

STRAINABILITY OF BALEN GAMES LEVEL IN BOATS
FOLLOWING EXPOSURE TO LIVE ATTENUATED
Bartonella mookeridgei B2

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**SERUM IMMUNOGLOBULIN G (IgG) LEVEL IN GOATS FOLLOWING
EXPOSURE TO LIVE ATTENUATED *Pasteurella multocida* B2**

By

Joshua S/O Phillip William

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SERUM IMMUNOGLOBULIN (IgG) LEVEL IN GOATS FOLLOWING EXPOSURE TO

TO LIVE ATTENUATED *Pasteurella multocida* B2

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LIST OF ABBREVIATIONS

BHI	-	brain heart infusion
BSA	-	bovine serum albumin
cfu	-	colony-forming unit
cfu/ml	-	colony-forming unit per milliliter
ELISA	-	enzyme-linked immunosorbent assay
etc	-	<i>et cetera</i>
Exp	-	example
Fig	-	Figure
HPR	-	horseradish peroxide
HS	-	Haemorrhagic septicaemia
Ig	-	immunoglobulin
IgG	-	immunoglobulin G
kDa	-	kilo Dalton
kg	-	kilogram(s)
m	-	metre(s)
MHC	-	major histocompatibility complex
ml	-	milliliter(s)
nm	-	nanometer
OD	-	optical density
PBS	-	phosphate-buffered saline
PBS-Tween20	-	phosphate-buffered saline with Tween20
rpm	-	revolutions per minute
SD	-	standard deviation
UMT	-	Universiti Malaysia Terengganu
%	-	percentage
μl	-	microlitre

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ABSTRACT

Pasteurella multocida B2 is the causative agent of Haemorrhagic septicaemia (HS), a disease that infects cattle and water buffaloes in the region of Asia. One of the best methods to increase the protection against HS is by inducing the production of Immunoglobulin G (IgG). Thus, a study was carried out to determine serum IgG level in goats following exposure to live attenuated *Pasteurella multocida* B2. Nine clinically healthy goats of either sex aged 7-9 months old were divided into three groups. Goats in Group 1 (Negative Control) were the unexposed control; Goats in Group 2 (Positive Control) were subjected to double intranasal exposures to formalin-killed *P. multocida* B2 while goats in Group 3 (Treatment) were subjected to double intranasal exposures to live attenuated *P. multocida* B2. Enzyme-linked immunosorbent assay (ELISA) was subjected to the serum samples collected once every week from each group of goats to determine the level of IgG. As the results, significant differences ($p < 0.05$) of IgG were obtained among all the groups in the study. The serum IgG levels of goats exposed to live attenuated *P. multocida* B2 in Group 3 showed a higher level of IgG as a reaction of immune response following exposure throughout the study and peaked at Week 6 compared to the IgG level of goats in Group 1 and Group 2 detected throughout the study. It was concluded that live attenuated *P. multocida* B2 induced a higher level of IgG in goats in Group 3 compared to the IgG level of goats in Group 1 and Group 2.

TAHAP IMMUNOGLOBULIN G (IgG) SERUM KAMBING BERIKUTAN PENDEDAHAN TERHADAP *Pasteurella multocida* B2 YANG TELAH DILEMAHKAN

ABSTRAK

Pasteurella multocida B2 adalah agen penyebab hawar berdarah, satu penyakit yang menjangkiti haiwan ternakan seperti lembu dan kerbau di negara-negara Asia. Satu cara yang terbaik untuk meningkatkan perlindungan daripada Hawar berdarah adalah dengan merangsang penghasilan Immunoglobulin G (IgG). Oleh itu, satu kajian telah dijalankan untuk menentukan tahap IgG dalam serum darah kambing berikutan pendedahan terhadap bakteria *Pasteurella multocida* B2 yang telah dilemahkan. Sembilan ekor kambing berumur di antara 7 - 9 bulan, tidak diutamakan jantina telah diagihkan sama kepada tiga kumpulan. Kambing di dalam Kumpulan 1 (Kawalan negatif) merupakan kambing yang tidak didedahkan terhadap sebarang bentuk bakteria *P. multocida* B2; kambing di dalam Kumpulan 2 (Kawalan positif) adalah kambing yang didedahkan dua kali secara intranasal kepada *P. multocida* B2 yang telah dimatikan menggunakan formalin manakala kambing di dalam Kumpulan 3 (Rawatan) adalah kambing yang didedahkan dua kali secara intranasal kepada *P. multocida* B2 yang telah dilemahkan. Enzyme-linked immunosorbent assay (ELISA) dijalankan terhadap sampel serum yang dikumpulkan sekali setiap minggu daripada setiap kumpulan kambing untuk menentukan tahap IgG. Keputusannya, perbezaan tahap IgG dalam serum darah kambing menunjukkan nilai kesignifikan ($p < 0.05$) diperolehi jika dibandingkan dengan ketiga-tiga kumpulan kambing. Tahap IgG kambing yang didedahkan kepada *Pasteurella multocida* B2 yang telah dilemahkan dalam Kumpulan 3 menunjukkan tahap IgG yang tinggi kesan tindakbalas imun sepanjang tempoh kajian dan memuncak pada minggu ke-6 jika dibandingkan dengan tahap IgG kambing dalam Kumpulan 1 dan Kumpulan 2 sepanjang tempoh kajian. Kesimpulannya, bakteria *P. multocida* B2 yang telah dilemahkan merangsangkan tahap IgG yang tinggi dalam serum darah kambing Kumpulan 3 berbanding tahap IgG dalam serum darah kambing Kumpulan 1 dan Kumpulan 2.