STIMULATION OF GUT-ASSOCIATED LYMPHOID TISSUE (GALT) FOLLOWING INTRANASAL EXPOSURE OF FORMALIN-KILLED *Pseudomonas multocida* B2 IN GOAT

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Stimulation of gut-associated lymphoid tissue (galt) following intranasal exposure of formalin-killed pasteurella multocida B@ in goat / Phang Siew Leng.

STIMULATION OF GUT-ASSOCIATED LYMPHOID TISSUE (GALT) FOLLOWING INTRANASAL EXPOSURE OF FORMALIN-KILLED *Pasteurella multocida* B2 IN GOAT

By

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: STIMULATION OF GUT-ASSOCIATED LYMPHOID TISSUE FOLLOWING INTRANASAL EXPOSURE OF FORMALIN-KILLED *Pasteurella multocida* B2 IN GOAT oleh PHANG SIEW LENG no. matrik: UK 6355 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi IjazahSARJANA MUDA SAINS (SAINS BIOLOGI, Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of variances
SE	Standard error
Cfu/ml	Cell formed per milliliter
H & E staining	Hematoxylin and eosin staining
GALT	Gut-associated lymphoid tissue
CMIS	Common mucosa immune system
MALT	Mucosa-associated lymphoreticular tissue
BALT	Bronchus-associated lymphoreticular tissue
Ig	Immunoglobulin

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ABSTRACT

A study was conducted on the cellular response following intranasal exposure of formalin-killed *Pasteurella multocida* B2 in the gastrointestinal tract in goats. Fifthteen clinically healthy goats were divided into three groups; Group 1 was exposed once to formalin-killed *Pasteurella multocida* B2, Group 2 was exposed twice whereas Group 3 remain as untreated control group. All groups were exposed using intranasal spray method technique. Five goats from Group 1 and two goats from Group 3 were slaughtered on day fifthteen while the other goats from Group 2 and the rest from Group 3 were slaughtered on day 28. The intestine samples were collected and fixed in 10% of formalin before processed for histological examination. The number of lymphocytes in duodenum, jejunum and ileum were increased significantly ($p<0.05$) especially on day 28. In addition, the number of intraepithelial, lamina propia and crypts lymphocytes were increased gradually ($p<0.05$) during the second exposure of formalin-killed *Pasteurella multocida* B2. However, the number of Peyer's patches lymphocytes were significantly high ($p<0.05$) on day 15 but showed declining pattern on day 28. Moreover, there were no correlation ($p>0.05$) between the number of lymphocytes and the size of Peyer's patches in this study. The results obtained from this study revealed that exposure of formalin-killed *Pasteurella multocida* B2 intranasally in goats were able to stimulate the response of GALT.

RANGSANGAN SALUR PENCERNAAN DIIKUTI SEMBURAN INTRANASAL OLEH Pasteurella multocida B2 (DIBUNUH FORMALIN) PADA KAMBING

ABSTRAK

Satu kajian berkaitan tindak balas sel diikuti pendedahan secara "oral" oleh *Pasteurella multocida* B2 (dibunuh dengan formalin) pada salur pencernaan telah dijalankan pada kambing. Lima belas ekor kambing yang sihat dibahagikan kepada tiga kumpulan; Kumpulan kambing yang pertama didedahkan sekali *Pasteurella multocida* B2 (dibunuh oleh formalin), kumpulan kedua didedahkan dua kali manakala kumpulan tiga tiada pendedahan dan bertindak sebagai kawalan. Kesemua kumpulan diberi pendedahan secara semburan intranasal. Lima ekor kambing dari kumpulan satu dan dua ekor dari kumpulan tiga disembelih pada hari yang ke-15 dan kambing yang selebihnya dari kumpulan tiga serta kumpulan dua pula disembelih pada hari yang ke-28. Sampel usus kecil yang dikumpulkan tersebut direndam dalam 10% larutan formalin sebelum proses histology dijalankan. Didapati bahawa bilangan limfosit pada duodenum, jejunum dan ileum menunjukkan peningkatan yang signifikan ($p<0.05$) terutama pada hari ke-28. Namun, bilangan limfosit pada *Peyer's patches* meningkat secara mendadak ($p<0.05$) pada hari ke-15 tetapi berkurangan pada hari yang ke-28. Tiada korelasi ($p>0.05$) diperhatikan antara bilangan limfosit dan saiz *Peyer's patches*. Keputusan yang diperolehi dari kajian ini menunjukkan bahawa pendedahan *Pasteurella multocida* B2 (dibunuh formalin) ini berupaya merangsang tindak balas sel pada salur pencernaan.