SNUFFLES DISEASE IN RABBITS: 3- HEMATOLOGICAL PARAMETERS

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ABSTRACT
Snuffles disease is a major problem in rabbits, caused by Pasteurella multocida and it is important to identify all parameters associated with this disease such as hematological parameters which are the aim of this study. For this reason group of rabbits (27) were injected I/P with 10⁷ CFU/ml P. multocida, other group, and control group injected I/P with pbs. All the hematological parameters were recorded at 4th, 8th, 12th, 16th and 20th day post infection. The results revealed marked leukocytosis accompanied by increase percent % of the neutrophils, monocytes and lymphocytes in infected group comparable to parameters of control group. The eosinophils% was 2% (normal) in both infected and control groups. Other hematological parameters such as hemoglobin and packed cell volume% were showed gradual decrease along the experiment periods. P. multocida induce during experimental infection marked leukocytosis accompanied by increase percent of Neutrophils, Monocytes and Lymphocytes together with marked gradual decrease of hemoglobin and packed cell volume%.

KEYWORDS: snuffles disease hematological parameters.

INTRODUCTION
Snuffles disease a major problem in rabbits caused by various Pasteurella multocida serotypes, the disease occurs during the stress factor such as shipping, mating, experimental handling and malnutrition[1,2]. P. multocida already present in upper respiratory tract and tympanic bullae of rabbits and during seasonal influences and other stresses factor the P. multocida multiply rapidly and induce the disease in the lungs and upper respiratory tract such as pneumonia, otitis media and rhinitis together with septicemia[3,4]. For the importance of this disease in rabbits, this study aimed to identify the hematological parameters associated with this experimental disease in rabbits using P. multocida.

MATERIALS & METHODS
A local strain of Pasteurella multocida were used, reidentified[5], LD50 and infective dose were determined according[6] method. LD50 was 10⁷ CFU/ml, infective dose was 10⁷ CFU/ml. Experimental Design: Two groups of rabbits, first group[7] kept as control injected I/P with pbs. The second group (27) rabbits were injected I/P with 10² CFU/ml P. multocida.

RESULTS & DISCUSSION

Leukocytes Count
The results showed differences in the mean values of leukocytes count in infected group (I G) and control group (C G) in 4th, 8th, 12th, 16th and 20th days post infection (Table-1).

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<td>7400±108</td>
<td>6325±143.6</td>
<td>65.7±0.47</td>
<td>50±1.58</td>
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<td>60.25±0.25</td>
<td>50±2.1</td>
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<td>12</td>
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<td>50.25±0.25</td>
<td>50±1.1</td>
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<td>20</td>
<td>8200±40.8</td>
<td>6325±62.9</td>
<td>48.25±0.47</td>
<td>50±0.71</td>
<td>2.25±0.25</td>
<td>2±0.40</td>
<td>49.50±0.64</td>
<td>45±0.28</td>
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Hematological Parameters
1. Leukocytes Count: By using hemocytometer chamber and according[7] the leukocytes were counted.
2. Differential Leukocytes count: Blood smear stained by leishman's stain and examined using battlement method by counting leukocytes cells and determine the neutrophils, monocytes and lymphocytes. Percent (%) according to[7].
3. Hemoglobin (Hb) Concentration: By using the spectrophotometer and drabkin's reagent as diluents and according to[7] method the amount of Hb concentration were recorded for each animal.
4. Packed Cell Volume (PCV): Using the hematocrit method, hematocrit centrifuge and microhematocrit reader as in [8].
Also the results showed differences in mean values percent of neutrophils, monocytes and lymphocytes in the infected group (I G) and control group (C G) at the 4th, 8th, 12th, 16th and 20th days post infection (Table-1). The mean values of eosinophils percent (%) in the infected group and control group were 2% along the periods of the experiment.

### TABLE 2: Mean values of hemoglobin (Hb) concentration g/dl and packed cell volume (pcv %) after P. multocida infection in I.G. and C.G.

<table>
<thead>
<tr>
<th>Day</th>
<th>I.G. (Hb)</th>
<th>C.G. (Hb)</th>
<th>I.G. (pcv %)</th>
<th>C.G. (pcv %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 M</td>
<td>8.70 ± 0.18</td>
<td>9.75 ± 0.25</td>
<td>28.5 ± 0.28</td>
<td>29.5 ± 0.63</td>
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<td>8 M</td>
<td>7.97 ± 0.06</td>
<td>9.75 ± 0.48</td>
<td>27.25 ± 0.25</td>
<td>29.75 ± 1.8</td>
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<td>12 M</td>
<td>7.17 ± 0.06</td>
<td>9.75 ± 1.11</td>
<td>26.5 ± 0.28</td>
<td>29.75 ± 0.2</td>
</tr>
<tr>
<td>16 M</td>
<td>6.90 ± 0.07</td>
<td>9.75 ± 0.75</td>
<td>26 ± 0.81</td>
<td>29.75 ± 3.7</td>
</tr>
<tr>
<td>20 M</td>
<td>6.75 ± 0.18</td>
<td>9.75 ± 0.48</td>
<td>25.75 ± 0.25</td>
<td>29.75 ± 0.48</td>
</tr>
</tbody>
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Hemoglobin Concentration and Packed Cell Volume percent%

The results showed gradual decrease in the mean values of hemoglobin (Hb) concentration and in packed cell volume (pcv %) at 4th, 8th, 12th, 16th, and 20th days post infection in the infected group comparable to the mean values of Hb and pcv% in control group (Table-2).

Leukocytosis is the feature of increased levels of white blood cells in blood stream occurred as a result of activation of bone marrow by P. multocida Asgs[9,10] so increase levels of neutrophils%, monocytes% and lymphocytes% which more evident in this study the neutrophilia occurred as a result of bacterial toxins in this case P. multocida induced pyogenic infection either localized or generalized[11], similarly monocytes increased their level% as a result bacterial toxin (P. multocida) in this study, similar to other bacterial infections such as brucellosis and tuberculosis[12]. Also lymphocytes% increased with P. multocida infection in this study similar to other bacterial infections such as tuberculosis, Brucellosis and syphilis[11]. Mean values of hemoglobin and packed cell volume were gradually decreased in infective group comparable to control group along the different periods post the infection with P. multocida, the gradual decrease of Hb and pcv% may related to the decrease the release of iron from macrophages to plasma cells, then reduced red cell life span and inadequate erythropoietin response to anemia[11]. In addition bacterial cells (P. multocida) in this study play a role in attachment with red cell wall, then decrease their number and life span.

### REFERENCES


