Clinical-Hematological Assessment of the Effectiveness of the Original Ointment “Veterinary Forest Balsam” by Modeled Aseptic Wound by Cats

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INTRODUCTION

As his arsenal the veterinarian has a large amount of treatments for external therapy, which are able to keep a comfortable condition under the affecting on the skin of numerous environmental factors. The most common are numerous ointments, balms, liniments, which have for their active component medical substances of different pharmacological groups [1, 2].

The interest for using of alternative methods of treatment by animals increases rapidly, what is due not only to modern tendencies, but also to dissatisfaction of doctors and owners of pets of treatments, which are traditionally used by veterinary medicine and to the frequency cases of individual intolerance to separate treatments [2, 3, 4]. Thereby the greatest demand have treatments with plant components which have recommended themselves as the best from the point of view of therapeutic and economic effectiveness in veterinary markets [5, 6].

Medical plant raw is the cheapest and most available source of obtaining of medicaments [7, 8].

Detailed research of a chemical composition, pharmacological properties as well as clinical trials of plants allow annually introduction in the practice of veterinary and human medicine of new, highly effective plants medicaments.

The authors developed the original ointment “Veterinary Forest Balsam”. The experimental example of the ointment contains exclusively plant and a number of oil-forming elements in its composition (pine galipot, olive oil, chlorophyll-carotene paste and others). For evaluation of its effectiveness these researches were conducted [6].
Methods:

As experimental animals were cats at the age not older than 5 years about the same mass contained at home. There were formed 2 groups of animals with 5 cats in each group. Aseptic wounds of kin of cats were modeled during surgical interference – ovariohysterectomy.

All animals for the 10 days before had treatment of exo- and endoparasites. After taking a history of life the animals were prepared for operative intervention as following: thermometry, auscultation, blood selection. Before a surgical operation an anesthesia of animal was conducted. The operation field – ventral surface of the abdominal cavity was appropriately prepared. After anesthesia it was done an operation by animal. The operation was conducted according to classical scheme- the access to uterus and ovaries was carried out through the white abdominal line by slitting layers of the abdominal wall. After ovariohysterectomy there were done stitching layers: the muscles by Capron “metric #4”, the skin with polikon “metric #”. The wound was protected from licking by the animal itself with postoperative bandage.

During post-operative period all cats were kept in similar conditions:

For assessment of the clinical status of cats, clinical condition, pulse, respiration, condition of healing during the postoperative period were taken into account.

The blood sampling for hematological and biochemical researches was conducted on 1th, 7th and 10th day.

Among the hematological parameters the amount of hemoglobin, the number of erythrocytes and leukocytes and leukocyte indicators were researched. Hematological researches were conducted with a hematological analyzer for veterinary MICROCC-20Vet (HTI, USA).

Biochemical researches were conducted with semi-automatic photometric analyzer BIALAB-100 c with a wide range of hardware and methodological capabilities. Wherein it was determined the amount of alanine transferase (ALT), aspartate aminotransferase (AST), the number of total protein, phosphorous, urea and creatinine, the coefficient de Ritis.

The wounds of cats of the control group were treated during the post-operative period in classical way (with 0.05% chlorgexidine biglucanate, and then with 3% iodine solution). The cats from the second, experimental group were treated with 0.05% chlorgexidine biglucanate, and then on the surface of cut the researched ointment “Veterinary Forest Balsam was applied (drawing 1).

Drawing 1: The surface of wound after treatment with the ointment “Veterinary Forest Balsam”

Local treatment of wounds of cats of the both groups were conducted 2 time a day.

The main part:

Preliminary researches showed that the ointment has no irritant and allergic properties, is stable by storage, i.e. “Veterinary Forest Balsam” meets all the requirements of its group of medicaments [4].

On the third day all animals of the experienced group had satisfactory condition, the body temperature within the normal range, the edges of wounds are dry, slightly swollen.

By cast of the control group the general condition is satisfactory, the temperature of body of two animals is above the norm, incision is mild pain, swelling the edges of wounds are dry.

On the 5th day of the research one of animals from the control group on the place had swollen incision with the accumulation of the interstitial fluid, had soreness, it was an increase of the local temperature, depression (drawing. 2).

Accordingly the additional therapy was conducted.

The rest of the animals from the group were monitored and the local treatment was conducted for them.
The cats of the experimental group were also monitored and treated. By one animal the post-operative incision was removed on the 5th day. The edges of wound were well closed, the swelling and pain were not observed.

On 7th day among all animals of the experimental group the bonding wound without pain of post-operative incision with clean and dry edges of cut were observed.

The control group differed by a delay in the healing of wounds, formation crusts of the cut, tension of the skin at the place of incision and slightly soreness.

On the 8th day by 2 animals from the experimental group the incisions were removed from the post-operation wound and by another 2 cats the incisions were removed on 10th day (drawing 3).

Thus, it is revealed, that the experimental example of the ointment “Veterinary Forest Balsam” accelerate for 1-2 days the healing of wounds in comparison to the traditional medicaments. Also it is worth to noting that anti-inflammatory and intensive regenerative properties of the ointment, the formation of a thin protective layer by its applying on skin. There was no formation of dry crusts with cause very often itching, discomfort and secondary wound infections by animals by processing with this ointment [9].

Changes of the morphological composition of blood of cats of the experimental group are statistically processed and summarized in the Table. 1.

According to the data provided in the table the significant differences in changes of the concentration of hemoglobin by all cats of the experimental group are not fixed and the index was within the norm oscillations.

The number of erythrocytes by all animals of the experimental group was within the norm 42.4-47.0 thousand/µl.

In the changes in the number of leukocytes by cats of the experience group was noticed following: on the 1st-7th day there was significant leukocytosis (p≤0.05) by those cats, to whom the ointment “Veterinary Forest Balsam” was used. On the 10th day by cats of the experience the leucocytosis was more marked by the cats of the control group. Consequently, the using of treatment stabilizes its leukocyte reaction of blood.

The changes in the eosinophils, lymphocytes, basophils and monocytes were minor determined, and all oscillations were within the physiological norm. The result of the research reveals that the application of the ointment has no significant effect on the amount of leukocyte indicators of blood of cats [10, 11].
Thus, the using of the ointment “Veterinary Forest Balsam” stabilizes the leukocyte reaction of the blood.

Data of changes of some biochemical parameters of blood by using as local therapy the ointment “Veterinary forest balsam” are summarized in Table 2.

Table 1: Morphological composition of blood of cats by modeled aseptic wounds, which are processed with the ointment “Veterinary Forest Balsam.”

<table>
<thead>
<tr>
<th>The timeframe of research, day</th>
<th>Group</th>
<th>Indexes</th>
<th>Leukogramm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Hemoglobin, g/l</td>
<td>Erythrocytes, thou./µl</td>
</tr>
<tr>
<td>1</td>
<td>Control</td>
<td>95.4±9.2</td>
<td>43.6±2.3</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>95.8±9.9</td>
<td>43.6±3</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>121.4±7.4</td>
<td>45.4±2.3</td>
</tr>
<tr>
<td>1</td>
<td>Experience</td>
<td>92.0±2.4</td>
<td>42.6±2.5</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>83.0±18.7</td>
<td>47.0±2.4</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>94.0±6.4</td>
<td>42.4±4.3</td>
</tr>
</tbody>
</table>

Note: With the sign * in this and the following tables the cases of significant differences (p≤0.05) of the researched parameters of cats of the experimental group in comparison to the control are marked.

Table 2: Biochemical composition of the blood of cats under the simulated aseptic wounds, which are processed with the ointment “Veterinary Forest Balsam.”

<table>
<thead>
<tr>
<th>The timeframe of research, day</th>
<th>Group</th>
<th>Total protein, g/l</th>
<th>urea, mmol/l</th>
<th>ALT, u/l</th>
<th>Creatinin, µmol/l</th>
<th>Alkaline phosphates, µmol/l</th>
<th>AST, U/g</th>
<th>Coefficient Ritis AST/ALT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control</td>
<td>82.6±7.5</td>
<td>5.7±1.4</td>
<td>41.4±11.8</td>
<td>137±15</td>
<td>56±14</td>
<td>24.7±5.2</td>
<td>0.8±0.04</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>69.7±2.5</td>
<td>5.8±0.6</td>
<td>62.2±11.5</td>
<td>154±9.8</td>
<td>70±12</td>
<td>24.3±3.6</td>
<td>0.4±0.04</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>70.8±1.8</td>
<td>5.7±0.7</td>
<td>48.0±12.0</td>
<td>117.5±6.6</td>
<td>68±12</td>
<td>27.6±5.1</td>
<td>0.6±0.17</td>
</tr>
<tr>
<td>1</td>
<td>Experience</td>
<td>69.6±5.0</td>
<td>6.0±1.2</td>
<td>40.8±10.3</td>
<td>84±10.7*</td>
<td>52±11</td>
<td>35.3±7.7</td>
<td>0.6±0.05</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>74.8±2.0</td>
<td>8.5±0.6*</td>
<td>62.1±9.8</td>
<td>79.2±9.0*</td>
<td>62±7</td>
<td>33.7±6.0</td>
<td>0.9±0.04</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>72.4±2.7</td>
<td>7.7±0.6</td>
<td>55.6±8.5</td>
<td>158±127*</td>
<td>47±8</td>
<td>26.5±3.7</td>
<td>0.4±0.1</td>
</tr>
</tbody>
</table>

The table shows that during the 10 days of the trial there were no significant differences in changes of the amount of total protein, of aspartate aminotransferase and alkaline phosphatase by experimental animals.

Blood parameters, which are the state of the liver (AST, ALT and alkaline phosphatase) characterizing showed that the application of the ointment “Veterinary Forest Balsam” has no experiencing effect on liver.

It is noteworthy that the level of urea in the treated group of cats on the 7th day in the experimental group of cats was significantly higher than in the control group.

The level of creatinine in the control group of cats on the 1st das and on the 7th day of the experiment was significantly higher than in the experimental group of cats. On the 10th day the level of creatinine by cats by using of treatment was significantly higher than in the control group of cats. Literary analysis leads to a generalization of changes of this of this index and to a conclusion that all of these changes are far from critical, which show renal damage and that the changes have wavy character within the middle and upper limit of norm.

Thus, the application of ointment “Veterinary Forest Balsam” during the treatment of aseptic skin wounds by cats does no significantly affect on the biochemistry indexes of blood and has no hepatotoxicity and nephrotoxicity.

Conclusion:

In this research the target was the conduction of clinical and hematological evaluation of the effectiveness of the original ointment “Veterinary Forest Balsam” in modeled aseptic skin wound aseptic skin wounds by cats.

As a result of experimental data it was revealed that the prototype of the ointment “Veterinary Forest balsam” accelerates for 1-2 days the healing of compared to traditional medicaments. Marked anti-inflammatory, regenerative properties of intensive preparation and formation of a thin protective layer by application on the skin. By the treatment with the ointment there was no formation of the drying crusts on the surface of the wound.

It is revealed that the using of the ointment of the “Veterinary Forest Balsam” stabilizes, the leukocytes blood reaction.

Blood indexes of AST, ALT and alkaline phosphatase during the research do not go beyond the norm. That implies that the organism does not feel toxic effect by the application as a local treatment of the ointment “Veterinary Forest Balsam”.

It was revealed during researches of the level of urea that their changes have a wavy character within the
middle and upper limit of norm. What shows that the treatment has no nephrotoxic reaction. The treatment is perspective for researching of dermatitis and festering wounds.

1. It was developed an original treatment – the ointment “Veterinary Forest Balsam”. Determining components of this treatment are plant elements – pine sap, olive oil, chlorophyll-carotene pastes. The ointment has no local irritating and allergic properties, is stable by storage, i.e. “Veterinary Forest Balsam” meets the requirements for this group of treatments.

2. The using of ointment “Veterinary Forest Balsam” by cats accelerate for 1-2 days the healing of the aseptic wounds, has anti-inflammatory, regenerative properties of intensive preparation and formation of a thin protective layer by applying on skin. There was no formation of dry crusts on the surface of wound by the ointment treatment.

3. It was revealed that the using of ointment stabilized the leukocytes blood reaction under the aseptic skin wounds by cats.

4. Application of the ointment “Veterinary Forest Balsam” during the treatment of aseptic skin wounds by cats does not significantly affect on biochemical blood indexes, the treatment has no hepatotoxicity and nephrotoxicity.

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REFERENCES