

ЗАКЛЮЧЕНИЕ:

Дисертационния труд е завършено проучване на регенеративния потенциал на еритропоетина върху костното зарастване. В процеса на изпълнението на планираните задачи, докторантът значително е повишил знанията и уменията си в приложението на регенеративната медицина за стимулиране на костното зарастване

Предложеният дисертационен труд отговаря на изискванията за присъждане на образователна и научна степен „ДОКТОР“ и предлагам на почитаемото научно жури да присъди ОНС „ДОКТОР“ на асистент Радина Наскова Василева-Минкова по научна специалност „Ветеринарна хирургия“, област на висше образование 6.0 Аграрни науки и ветеринарна медицина, професионално направление 6.4. Ветеринарна медицина.

17.02.2023 година

Становище:.....

заличено съгл.

чл. 23 от ЗЗЛД

(проф. Богдан Янев Аминков двми)

ТРАКИЙСКИ УНИВЕРСИТЕТ
Стара Загора
Ветеринарно медицински
факултет

Вх. №: 05
Дата: 08.05.2023

STATEMENT

On the dissertation paper

by

Radina Naskova Vasileva – Minkova, DVM,

PhD student in individual form of studies,

at the Department of VETERINARY SURGERY,

Faculty of Veterinary Medicine, Trakia University

on:

**“EXPERIMENTAL AND CLINICAL STUDIES ON THE EVALUATION OF THE
REGENERATIVE POTENTIAL OF ERYTHROPOIETIN ON BONE RECOVERY”**

supervisor Assoc. prof. Dr. Tsvetan Minchev Chaprazov, DVM,

FOR AWARDING PhD EDUCATIONAL AND SCIENTIFIC DEGREE

PROFESSIONAL AREA: VETERINARY MEDICINE

SCIENTIFIC SPECIALTY “VETERINARY SURGERY”

The dissertation paper is written on 191 standard typewritten pages and contains the following sections:

- Contents – 4 p.;
- List of abbreviations used – 2 p.;
- Introduction – 2 p.;
- Literature review – 52 p.;
- Own research - 21 p.;
- Results – 40 p.;
- Discussion – 33 p.;
- Conclusions – 2 p.;
- Contributions and recommendations for the practice – 2 p.;
- Publications related to the dissertation paper - 1 p.;
- References – 27 p.

INTRODUCTION

The introduction briefly describes the transplants used in retarded or missing osteogenesis. Angiogenic potential of erythropoietin and its application in the treatment of critical bone defects in rats has been described, as well as the option for its clinical application in patients with tubular bone fractures.

LITERATURE REVIEW:

At the beginning of the literature review, the detection and amino acid sequence of erythropoietin, structure, production, mechanism of action, hematopoietic functions and the effect of erythropoietin on endothelial tissue have been discussed in detail.

In the literature review Dr. Vasileva discusses the methods of application of erythropoietin. The investigations of the structure and cellular composition of bone tissue and the processes of bone fusion have been explained in detail. The known methods for assessing bone recovery (clinical examination, diagnostic imaging studies, mechanical assessment, serological markers and histological assessment) and bone markers, indicators of bone resorption and bone formation processes, have been discussed in detail.

Assistant professor Vasileva makes a comprehensive review of what is known in literature about the mechanisms for stimulating bone regeneration, which is also the main goal of the dissertation paper. Experimental models of bone defects in rodents and lagomorphs used to study the effect of EPO administration on bone healing have also been discussed in detail.

Based on the extensive analysis of the literature sources for the purpose of the dissertation paper, Dr. Vasileva found no information regarding the application of EPO in veterinary medicine in clinical patients with fractures, as well as in those with large bone defects, due to tumors or infections.

OWN STUDIES

1. OBJECTIVE AND GOALS

The objective of the dissertation paper is to study the effect of erythropoietin on the regeneration of flat and tubular bones with critical defects in rats and the possibility of its clinical application in cats with fragmented fractures of long tubular bones. The objective is well formulated and corresponds to the title of the dissertation paper. To achieve the set goal, Doctor Vasileva formulated 7 tasks.

2. MATERIAL AND METHODS

The experimental and clinical studies were carried out in the period 2019-2021 on 92 white laboratory rats, Wistar breed line, males, with mature skeleton, average weight 270±25 grams and 6 cats with fragmented fracture in the area of the femur diaphysis.

In her study Doctor Vasileva has used erythropoietin (Sandoz GmbH, Kundl, Austria), collagen cone Collacone® (Bofiss biomaterials GmbH, Germany) and bone graft (Bio-Gen® (BIOTECK, Italy).

Experimental groups:

Evaluation of the rhEpo potential in terms of flat bone regeneration has been investigated in three groups of twelve laboratory animals.

Evaluation of the rhEpo potential in terms of tubular bone regeneration has been carried out in six groups of laboratory animals – one control and five experimental ones.

Clinical and preclinical studies, bone marker studies, radiographic studies, computed tomography studies, osteodensitometric studies and histological studies have been performed on all animals.

The obtained primary information has been processed with statistical analyses (GraphPad Instat® version 3.06; MedCalc version 10.2.0.0, MedCalc Software, Belgium).

- Descriptive statistical analysis – calculating the mean arithmetic, standard deviation/error, median, minimum and maximum values
- One-factor dispersion analysis – by non-parametric (Mann-Whitney) and parametric test (ANOVA)

RESULTS:

The results have been presented in detail and clearly. The obtained results are given in 10 tables and 51 figures. Values of erythrocytes, hemoglobin and hematocrit in the rats of the F1-F6 experimental group on day 90 (from Table 9 Values of the erythrocytes, hemoglobin and hematocrit in the rats of the F1-F6 experimental group on days 0, 30 and 90, presented as median (min-max)) are also reflected in Figures 42 (Erythrocyte values in F1-F6 experimental group rats on day 90), 43 (Hemoglobin values in F1-F6 experimental group rats on day 90) and 44 (Hematocrit values in rats from F1-F6 experimental group on day 90).

Assistant professor Vasileva has managed to interpret the results contained in the tables and figures briefly and clearly.

DISCUSSION:

In the Discussion section, Dr. Vasileva skillfully compares her own results with those of other authors. At the beginning of the discussion, the candidate was able, based on what is known in the literature, to point out the experimental operational methods she had chosen in an argumentative manner. Assistant professor Vasileva was able to highlight the results obtained by her, comparing them with those of other authors working in the same scientific area. She skillfully graded the information contained in each of the imaging methods used to study the processes of bone callus formation.

Based on the obtained results, the author makes 14 conclusions; 5 original and 4 affirmative contributions and 4 recommendations for the practice.

In connection with the dissertation paper three publications have been provided. These have been published in the following journals: Bulgarian Journal of Veterinary Medicine, 2021, 24(1), 1-11., Egyptian Journal of Histology - Accepted on 01.06.2022 and Tradition and Modernity in Veterinary Medicine, 2022, 7, 1(12): 38-43. In two of the publications Dr. Vasileva is the leading author and in one she is the only author.

The set objective has been achieved. The ground about this is the sufficient number of experiments and clinical patients included in the study. Modern devices and methods have been used. The obtained results have been skillfully interpreted in the section Discussion.

REFERENCES:

Dr. Vasileva has pointed 387 references, of which 14 in the Cyrillic and 373 in the Latin alphabet.

CONCLUSION:

The dissertation paper is a comprehensive study of the non-electrophysiological and biochemical changes in dogs with cataract. In the course of execution of the planned tasks, the PhD student has significantly enhanced her knowledge and skills in the application of regenerative medicine for stimulation of bone recovery.

The proposed dissertation paper complies with the requirements for awarding PhD educational and scientific degree and I do propose to the esteemed scientific jury to award PhD educational and scientific degree to Assistant professor Radina Naskova Vasileva-

**Minkova in the scientific specialty "Veterinary surgery", field of higher education 6.0.
Agrarian sciences and veterinary medicine, professional area 6.4. Veterinary medicine.**

17 02 2023

Reviewer/Statement prepared by

(prof. Bogdan Yanev An

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