

The Influence of Microalgal Preparation Administration on the Cryoresistance of the Bull Semen Material

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Abstract

The biopreparation's effect of algal origin on cells semen's cryoresistance and the reproductive system function of the sire bulls was established. BioR was influenced significantly (fig. 1) the cryoresistance of the semen material of sires bulls. To the end of the administration period (10 days), the group cured with 0,1 ml/ 100kg living mass /day showed an increase of the spermatic mobility with 69,14%, comparing to the preexperimental period. The group cured with 0,4 ml/ 100kg living mass /day showed an increase of 3,88%. The next 50 days from the ceasing of the preparation administration, the seminal cells mobility increased for the first group (0,1 ml/100 kg living mass/day) with 107,14%, and for the second group (0,4 ml/100 kg living mass/day) this indices value maintains on the stage. The DMA concentration in blood for the first group was 3,74 mmol/l, 10 days after the administration we established an decrease of this indices till 3,12 mmol/l ($P<0,05$) and 50 days after this treatment ceasing the value of studded index was 2,95 mmol/l ($P<0,05$). The group carried with 0,4 ml/ 100 kg bodily weight /day showed a tendency of decrease only 50 days from the ceasing of the preparation administration.

Keywords: algal biopreparations, cryoconservation, semen material cryoresistance, sires bulls, spermatogenesis.

1. Introduction

Due to important works in phytobiotechnology [1; 2; 3] it was possible to obtain biologically active preparations of algal origin with a high efficiency of proteins, amino-acids, nucleic acids, vitamins, microelements etc., which have demonstrated numerous beneficial effects [4; 5, 6] being used in animals breeding. Taking into account the data from literature but also due to the fact that these preparations contain biologically active substances, this study is a follow-up of certain previous researches [7], especially concerning the effect of the biopreparation from *Spirulina platensis* administration on the spermatogenesis of sire bulls used in artificial insemination technology.

2. Materials and methods

The investigation has been performed on bulls from the Black Spotted breed of Moldavian type. The bulls have been maintained during the investigation in adequate conditions from the point of view of microclimate and fodder.

The bioextract administrations have been done daily during 10 days in accordance with the following protocol:

- 1.Group 1 – the control non cured group the biopreparation;
- 2.Group 2 – 0,1 ml/ 100kg living mass/day.
- 3.Group 3 – 0,2 ml/100 kg living mass/day;
- 4.Group 4 – 0,4 ml/ 100kg living mass/day.

Having as purpose the research of the biopreparation's effect from algae on the semen material's cryoresistance reproductive system function, in these experimental groups the functional and and the cryobiological indices

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have been studied: the spermatozooids mobility, and the index of cryoresistance.

These indices have been tested in the preexperimental period (30 days) till the beginning of the extract's injection, during the extract's administration (10 days) and 50 days after the ceasing of *Spirulina platensis* extract administration (the length of a bull's spermatogenesis cycle).

3. Results and discussion

BioR was influenced significantly (Figure 1.) the cryoresistence of semen material of sires bulls. The produced effect depend of the administrated dose. The group cured with 0,1 ml/100 kg/living mass/day the cryoresistence indice showed an increase of 26,67% comparing to the control non cured group. The double dose showed an increase of 51,11%. In case of 0,4 ml the cryoresistence indice was superior comparing to the dose of 0,1 ml but it has been noticed an decrease comparing to the 0,2 ml dose.

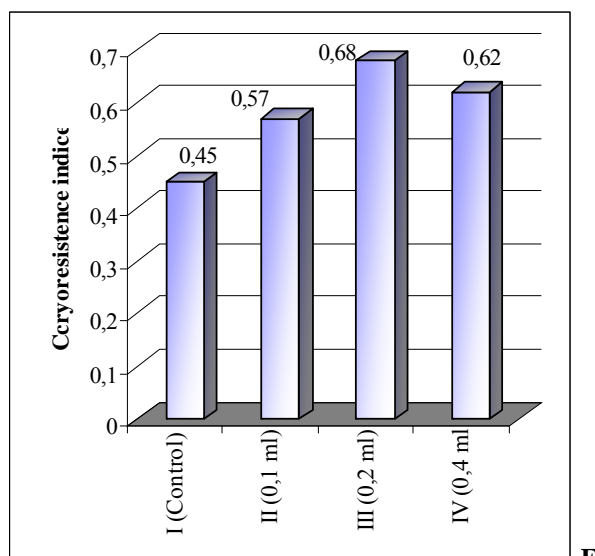


Figure 1, Effect of Bior on the value of cryoresistence indice of sires bulls semen material

To the end of the administration period (10 days), the group cured with 0,1 ml/100 kg living mass /day showed an increase of the spermatic mobility (diag. 2) with 69,14%, comparing to the preexperimental period. The group cured with 0,4 ml/100 kg/ living mass day showed an increase of 3,88% The estimation of this index during the next 50 days from the ceasing of the preparation administration, showed a permanent increase of

the seminal cells mobility till 5,51 points for the first group (0,1 ml/100 kg living mass /day) or with 107,14% ; as for the second group (0,4 ml/100kg living mass /day) this index value maintains on the stage (Figure 2).

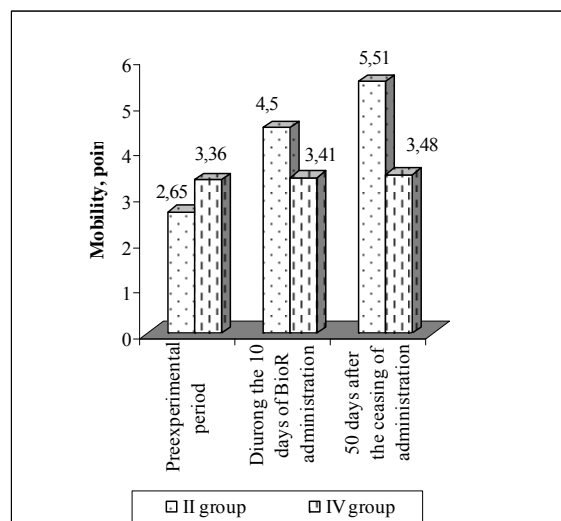


Figure 2. Influence of BioR administration on sires bulls's spermatozooids mobility

The biopreparation's influence from *Spirulina platensis* on the hormonal status, it was been noticed also a dependence of the administrated dose (Figure 3).

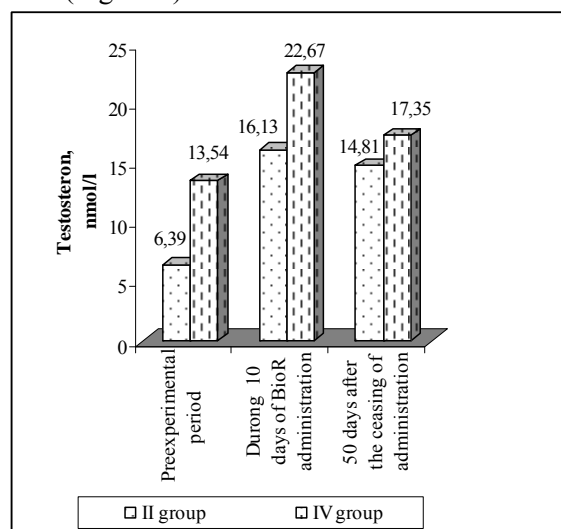


Figure 3. Influence of BioR administration on the serum testosterone concentration in sire bulls

Experimental obtained dates demonstrates that the *Spirulina platensis* biopreparation's administration to the sires bulls are an benefic influence on the lipids peroxydation process in experimentals animals. Administration of biopreparation in the

0,1 ml volume/ 100 kg bodily weight during 10 days contributed to diminish the free radical's chain reaction speed, estimated in accordance with concentration of the final product (malonic dialdehyde) in the blood serum (Figure 4).

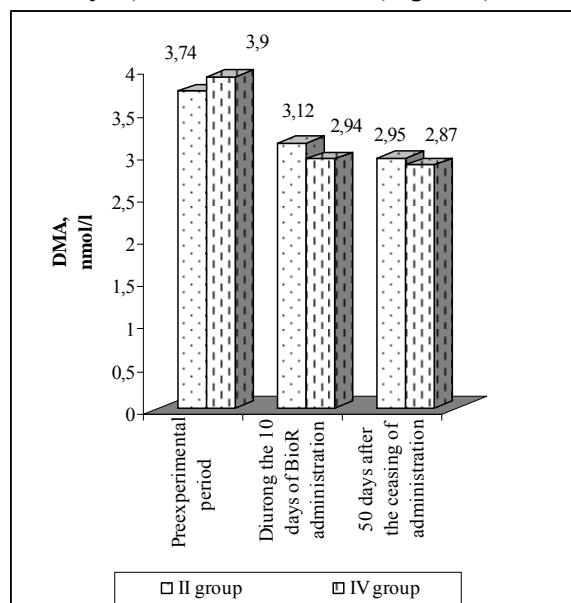


Figure 4. The influence of BioR on lipids peroxidation process in blood of sire bulls

In the preexperimental period the DMA concentration in blood for the first group was 3,74 mmol/l, 10 days after the administration we established an decrease of this index till 3,12 mmol/l ($p < 0,05$) and 50 days after this treatment ceasing the value of studied index was 2,95 mmol/l ($P < 0,05$). The group carried with 0,4 ml/ 100 kg bodily weight day showed a tendency of decrease only 50 days from the ceasing of the preparation administration.

4. Conclusions

Some of the conclusions are that the bio extract from *Spirulina platensis* has an evident influence

on the reproductive system function of sire bulls. The seminal cells mobility, the pathospermatozoa, the hormonal statute efficiency and the lipids peroxydation process inhibition are intensely influenced. The seminal cells concentration and the ejaculated volume in the ejaculated material aren't influenced at all.

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