American Journal of Biodiversity
https://biojournals.us/index.php/AJB
ISSN: 2997-3600

Efficacy of Bisanar Preparation against Bee Colonies Infested with Varroa Mites

Magistr: **A. Sh. Shodmonov,** Scientific advisor: **Sh. N. Nasimov,**
Assistant: **D. I. Azimova, N. B. Babamuratova,** Magistr: **Z. B. Egamberganov**
Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology

Received: 2024, 15, Apr
Accepted: 2025, 21, May
Published: 2025, 25, Jun

Annotation: This article presents the experimental results on the efficacy of the Bisanar preparation in treating bee colonies infested with varroa mites. In our experiments on combating parasitic diseases in bees, three groups were formed. The Bisanar preparation was administered, and it was characterized by increased vitality in the bees, enhanced longevity of worker bees, and the development of immunity against various types of diseases

Keywords: Bisanar, varraotoz, mite, worker bees, drone bees, syrop, entomological cage, sprayer, Carpathian breed worker bee, Physiological solution or saline solution, honey.

Introduction: On February 8, 2022, the President of the Republic of Uzbekistan set forth priority tasks for the development of the beekeeping sector in Clause 6 of Decree No. PQ-120. In particular, the decree identifies the fundamental improvement of the beekeeping management system and the implementation of advanced practices in beekeeping across all regions of the country as priority objectives. It emphasizes the importance of organizing breeding activities in the beekeeping sector on a scientific basis, increasing the efficiency of beekeeping farms, expanding the volume and variety of honey production, introducing modern technologies for honey processing, enhancing the export potential of the sector, and applying advanced practices throughout the country.

Nowadays, due to the impact of toxic substances and high-frequency electromagnetic waves, the immune status of bees is declining, leading to an increase in their susceptibility to diseases. This, in turn, raises the responsibility of beekeepers, veterinary specialists, and researchers.

Conducting epizootiological investigations and analyses at beekeeping farms, identifying the causes of diseases and mortality, as well as implementing veterinary-sanitary measures for the treatment, prevention, and eradication of diseases on a regular basis, are considered essential tasks.

When inspecting a bee colony infected with Varroatosis, a large number of dead bees (podmor) can be found at the bottom of the hive. The bees often crawl out of the hive and die on the ground near the wintering site. Upon examining these diseased bees, small parasitic insects (mites) can be detected on their bodies. During the summer period, not only worker bees, drones, and queens are affected, but also the larvae and pupae, since the mites parasitize them as well. This disease does not follow a seasonal pattern and can occur at any time of the year. If it becomes widespread, it can cause significant economic damage to bee colonies. The degree of infestation of the larvae depends on the season. The survivability of a bee colony is predicted based on the level of this infestation.

In Varroatosis, the death of larvae that have reached the pupal stage and the deformity of young bees emerging from the cells are observed. The level of infestation in the colony can be determined by the number of deformed bees. Dead larvae emit a foul odor when crushed, making them easy to remove from the cells. Bees infested with mites become restless, leave the cells, and fall to the bottom of the hive. Colonies affected by mites become agitated and cannot cluster properly during wintering. Their growth and honey production decrease, and the queen's egg-laying stops early in autumn. In autumn, weakened colonies are attacked by strong bee colonies. The appearance of the hives resembles that of European foulbrood disease.

Materials va methods: Scientific research was conducted at the interdepartmental Opta-Tech laboratory of the SamDVMChBU Department of "Diseases of Poultry, Fish, Bees, and Fur Animals," in laboratory room No. 660 established under the innovative project No. PZ-2020123121. The study was carried out using specially prepared bee entomological cages (BEC), employing observation methods, microscopy, and group testing to determine the effect of Bisanar preparation aerosol (applied using a spray device) on the Varroa mite.

Research Results. Three specially prepared bee entomological cages (BECs) were brought to the laboratory from a beekeeping farm, each containing 30 worker bees of the Carpathian breed. For the research, two experimental groups and one control group were established. The experimental groups were treated with the Bisanar preparation in two different doses.

Bisanar is a transparent yellow liquid with a distinctive odor, containing oxalic acid, coriander and juniper oils, as well as thymol. It is produced in 10 ml ampoules for the first dose, 20 ml for the second dose, and also in 50 ml dark glass bottles.

Before application, 2 ml of the preparation was dissolved in 2 liters of warm water until a suspension was formed. Then, 2 ml of the prepared solution was drawn into a special spraying device and applied to the specially prepared entomological cages.

Bisanar was applied twice at a temperature of +7°C or higher, with a 10-day interval between treatments.

1-Table. The Effectiveness of Bisanar Application

№	Group names	Number of Bees	Amount of Administered Preparation	Method of Application	Obtained Results	
					Number of Deaths	%
1	**Experimental Group**	40	1 ml	Ayrazol	12	40%
2	**Experimental Group**	40	2 ml	Ayrazol	7	23%
3	Control group	40	-	-	23	76%

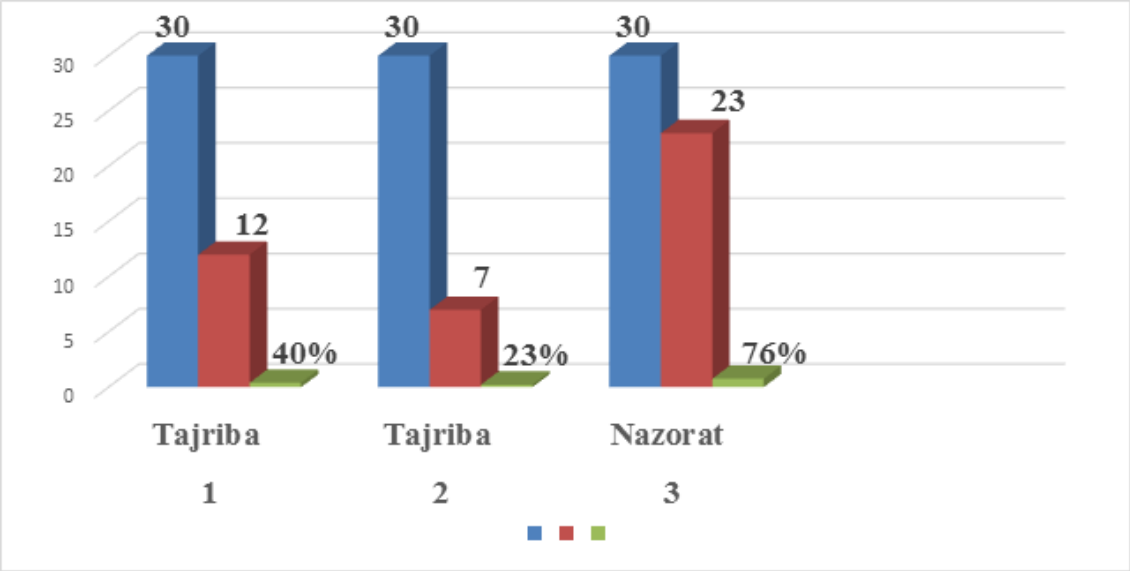
The bees in three specially prepared entomological cages were divided into three groups in the laboratory: the 1st and 2nd groups were experimental, and the 3rd group was the control. The Bisanar preparation was applied to the 1st experimental group at a dose of 1 ml using the aerosol method. The 2nd experimental group received 2 ml of the preparation by the same aerosol method. The control group was given a sugar suspension. After the application, the bees were monitored under observation for 7 days.

The results showed that in the 1st experimental group, the number of deaths was 12, accounting for 40%. In the 2nd experimental group, the number of deaths was 7, representing 23%. In the 3rd control group, the number of deaths was 23, which accounted for 76%.

2-Table.

+

Dynamic Analysis of the Effective Impact of Bisanar Preparation



Conclusion: Based on the conducted laboratory research, it was determined in the experiment that the Bisanar preparation is an effective drug for treating Varroatosis in bees. The experiments showed that Bisanar has a high therapeutic efficacy against Varroa mites in infested bees. When a mixture of 2 ml of the preparation with 1 liter of distilled water was applied by spraying, the mites died quickly. It was also proven during the experiments that treatment with Bisanar, when carried out in the second decade of spring, after the initial flight of the bees and before the start of honey collection, does not affect the quality of the resulting honey product.

References:

1. Nasimov Sh.N., Gerasimchik V.A., Mamatova Z.B., Khabibov F.A. *Bee Diseases and Pests: Textbook*. Tashkent, 2021.
2. *Varroatosis of Bees: A Manual*. Vitebsk, 2019.
3. Isamukhamedov A.I., Nikadambaev Kh.K. *Bee Diseases and Pests: Manual*. Tashkent, 2013. pp. 3-5.
4. Vodnikov, I. Yu. Invasive Diseases of Bees / I. Yu. // Veterinary Medicine of Agricultural Animals. — 2006. — No. 9. — pp. 36-38.
5. Sadovnikova E.F., Gisko V.N., Panikiv E.M. *Varroatosis of Bees. Recommendations.* Vitebsk VGAVM, 2019. pp. 4-23.

6. Beekeeping and Veterinary Fundamentals of Bee Diseases: Educational and Methodological Manual / G. Zelyutkov [et al.]; Vitebsk State Veterinary Academy, Department of Small Animal and Poultry Diseases.
7. Vodnikov, I. Yu. Invasive Diseases of Bees, *Veterinary Medicine of Agricultural Animals*, 2006, No. 9, pp. 36-38.