

# THE INFLUENCE OF ESSENTIAL OIL *MENTHA PIPERITA* ON MICROCOCCUS SP

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## Abstract

The subject of this study was the examination antimicrobial activity of peppermint oil (*Menthae piperitae*). The results have shown that etheric oil of *Menthae piperitae* reflects good antimicrobial activity on bacterial culture that we used in this study. It is concluded that essential oil can use for air disinfection.

## Introduction

The study of plant phytoncides currently continues to be a priority area of biological research, and is also of great practical importance. In recent decades researches of the effect of extracts from plants and essential oils of plants on microorganisms have been conducted in our country (Raikova S. V., 2011; Mlechko E. A., 2015). Various methods of air disinfection using essential oils are known. The most popular in air disinfection are essential oils of coniferous plants. However, the essential oils of other plants are also able to have a protective effect, applicable in the purification of the air.

The aim of this work was to study the effect of essential oil obtained from the leaves of peppermint (*Mentha piperita*) on the growth parameters of bacterial culture (*Micrococcus* sp.), compared with the effect of quartz UV irradiator.

## Materials and Methods

Essential oil was obtained from the leaves of peppermint (*Mentha piperita*), the company "Aeromed", was purchased in the pharmacy chain of Ivanovo. The extraction of essential oil from the raw material was carried out by hydrodistillation. This method is a distillation with water vapor and is widely used to obtain essential oil in its pure form.

Antimicrobial activity was determined against a standard strain of *Micrococcus* sp., a representative of opportunistic bacteria often found in the air. To compare the antimicrobial effects, a quartz UV irradiator was used.

The experiment was carried out in 2 repetitions. The first series was conducted to determine the intensity of the effect of mint essential oil on the bacterial substance. To clarify the results, a second series of experiments was performed.

The experiment included 4 variants (**fig.1**):

- 1- control,
- 2 - with mint essential oil in the amount of 0.08 ml on the lid of a Petri dish,
- 3-the presence of mint essential oil in the amount of 0.08 ml at intervals of 10 minutes,
- 4-exposure to quartz UV irradiator.

Next, the Petri dishes were placed upside down in the thermostat for a day. After 24 hours, the growth of bacterial colonies was visually assessed by the size of the bacterial substance.

Figure 1. The experiment diagram

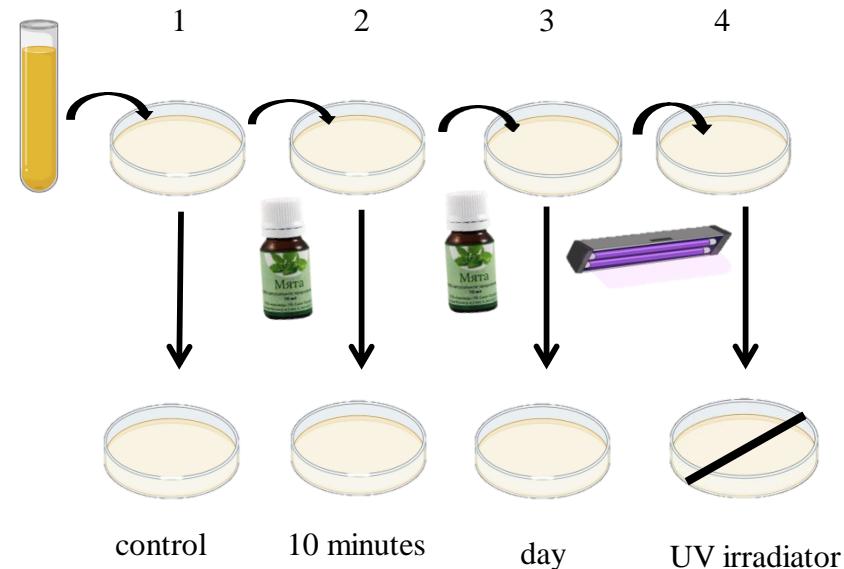
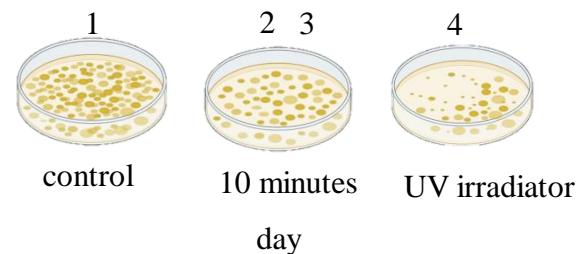


Figure 2. The effect of essential oil *Mentha piperita* on *Micrococcus* sp



## Results

When studying the antimicrobial activity of essential oil, the following results were obtained. It was found that the essential oil of peppermint has antimicrobial activity against the culture of micro-organisms *Micrococcus* sp. A comparative analysis in variants 2 and 3 showed a decrease in the growth of the bacterial film relative to the control variant. However, it is noted that the antimicrobial activity of the essential oil does not depend on the time interval in the second and third variants (10 minutes and a day, respectively).

Compared to the quartz UV irradiator, peppermint essential oil showed less antimicrobial activity (**fig.2**).

The results obtained indicate the presence of a bacteriostatic effect of *Mentha piperita* essential oil in relation to the strain taken in the experiment. In this regard, it is of interest to use *Mentha piperita* essential oil for air disinfection. However, it is necessary to take into account the possibility of developing allergic reactions in people who are prone to allergies

## Conclusion

1. Essential oil *Mentha piperita* has an antimicrobial effect against bacteria (*Micrococcus* sp.).
2. The antimicrobial activity of essential oil *Mentha piperita* does not depend on the duration of exposure.
3. Quartz UV irradiator has a more persistent bactericidal effect against bacteria (*Micrococcus* sp.), compared to the action of peppermint essential oil.

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