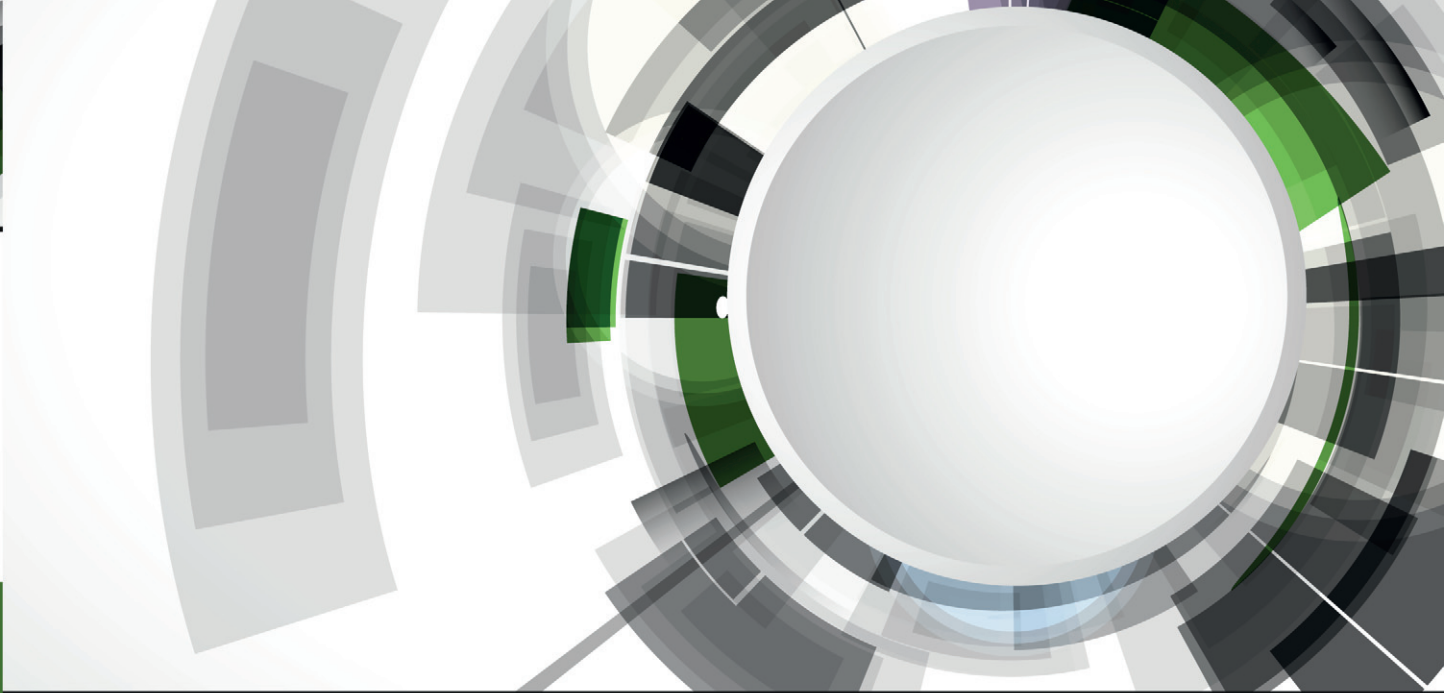




Natural Remedies for Pest, Disease and Weed Control

EDITED BY
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Fungistatic Properties of Lectin-Containing Extracts of Medicinal Plants

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INTRODUCTION

Agricultural practice is associated with the loss of yield due to biotic factors, such as plant damage by pests, diseases, and competing weeds. It is proved that the losses on the average make up 30%–50%, but can reach 100%. Pathogenic microorganisms that develop on plants cause infectious diseases, the treatment of which by pesticides mainly leads to the development of resistance of pathogenic microflora and the accumulation of metabolic products in plant production and the environment. To avoid such negative moments, the search for substances of plant origin with antimicrobial activity is being carried out. Natural biologically active substances that have such an effect include plant antibiotics, phytoncides, essential oils (see Chapter 6 for details), balsams, resins, tannins, organic acids, alkaloids, and glycosides. All of them are formed during the life of different groups of plants from the simplest to the highest to protect their living tissues from the reproduction of microorganisms in them. In addition, they activate vital functions of plants, destroy insects, frighten rodents, stimulate the growth of some plants, and inhibit the growth of others. This is evidenced by the numerous experimental materials of recent decades [1–3].

Prospects for the Use of Medicinal Plants in Plant Protection

Natural plant compounds—a source of biopesticides

A review of various studies suggests that in many scientific centers, there is a systematic screening of plants—producers of compounds, which would have the inherent antimicrobial and antiviral properties. It should be noted that in this plan, there are results

that give hope that in the next decade new products with such properties will appear on the market of biological products.

According to Lesnikov [4], the flora of Europe is extremely rich in medicinal plants, which contain natural antifungal components. More than 879 species of higher plants from 128 families are producers of fungicides. The list of plants is constantly updated and increased, especially in recent decades.

In Germany, experiments were conducted to study more than 250 extracts derived from different parts of the plant (leaves, buds, flowers, fruits, roots, bulbs, etc.) for fungicidal activity. As a test object for experiments, *Fusarium nivale*, *Phoma lingam*, *Botrytis cinerea*, *Pythium ultimum*, *Rhizoctonia solani*, and others were used. In climatic chambers, extracts of 0.03%, 0.1%, 0.3%, and 1% concentrations were used on cucumbers against powdery mildew, beans against rust, and potatoes against phytophthora. In field experiments, they were tested on apple with scab, fruit rot, powdery mildew of wheat and roses, gray rot of strawberries, and others. The author has shown that some extracts have a high (up to 80%) fungicidal activity, not inferior to commercial drugs. However, it is noted that the technology of preparing on plant basis can be quite expensive [5].

The activity of 24 extracts from 131 species of plants in relation to the burn agent *Erwinia amylovora* was studied using the diffusion method in agar. The potency of suppression of *Juglans nigra*, *Berberis vulgaris*, and *Rhus typhina* at concentrations of 5.2% and 1.25% was comparable to that of streptomycin inhibition (17 mg dm^{-3}) [6].

In Slovakia, in the Petri dishes, the effect of extracts from 500 species of 280 genera and 74 families on