

# **Secondary plant material is the rational alternative in veterinary medicine**

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Nowadays, antimicrobial resistance is a growing problem. The issue is the development of medicinal feeds containing active substances of biological origin instead of antibiotics.

Therefore, we have been conducting research on extracts of thyme waste. It was established that the thyme extract contains sufficient flavonoids and exhibits antimicrobial activity.

Keywords – antimicrobial resistance, thyme, waste, flavonoids, antimicrobial activity.

## **Introduction**

Antimicrobial resistance to medicinal products for human use and veterinary medicinal products is a growing health problem in the Union and worldwide. Due to the complexity of the problem, its cross-border dimension and the high economic burden, its impact goes beyond its severe consequences for human and animal health and has become a global public health concern that affects the whole of society and requires urgent.

Environmental incidents that are observed following the administration of a veterinary medicinal product to an animal should also be reported as suspected adverse events. Such incidents may consist, for example, in a significant increase of soil contamination by a substance to levels considered harmful for the environment or in high concentrations of veterinary medicinal products in drinking water produced from surface water [1].

Consequently, the issue is the development of medicinal feeds containing active substances of biological origin. Oregano, thyme, garlic, horseradish, chili pepper, peppermint, cinnamon, anise are used as natural growth stimulants for farm animals [2].

The technology of feed manufacturing involves the addition of antioxidants, preservatives, biostimulants and components intended for the treatment and prevention of animal diseases in their composition. Nowadays, investigations on secondary metabolites recovery from plant and by-products are increasing due to consumer's awareness of its health and nutraceutical benefits. Currently, many studies have focused on agricultural and industrial wastes in the search for natural antioxidants. One of the approaches is to use as raw material components of the feedstock of plant raw materials [3, 4].

## **Results and Discussion**

In order to solve this problem, the content of the biologically active substances and the antimicrobial activity of *Thymus vulgaris* waste after the production of the medicinal product Pertusyn syrup was studied.

Plant compounds especially phenolic compounds such as flavonoids, phenolic acids, tannins are very important components for the free radical scavenging and antioxidant activities of plants. This family of compounds acts as antioxidants and thereby protect from degenerative diseases in which reactive oxygen species (ROS) are involved. Therefore, the aims of the present study were to evaluate the efficiency of the secondary extraction to receipt polyphenolic compounds and to determine its biological activity.

Quantitative detection of the TFC was carried out using Cary-50 Varian spectrometer the method of definition is described in [5]. Total flavonoid content is 0,92 % expressed of rutin.

To evaluate the antimicrobial activity following bacterial species were used: Gram-positive *Staphylococcus aureus* ATCC 6538-P, *Bacillus subtilis* ATCC 6633 and isolated from soil: *Staphylococcus hyicus*, *Micrococcus luteus*; gram-negative: *Pseudomonas aeruginosa* ATCC 9027, *Escherichia coli* ATCC 8739, *Salmonella Abony* CIP- 8039 and isolated from the environment *Acinetobacter johnsonii*, *Moellerella wisconsensis*; the fungi: *Candida albicans* ATCC 10231, *Candida utilis* Lia-01, *Saccharomyces cerevisia* ATCC 9763, *Aspergillus brasiliensis* ATCC 16404. Determination of antimicrobial activity using the diffusion into agar. The results of antimicrobial activity studies is that 70% aqueous-alcoholic extract appear to be more effective than 40% extract, namely: the growth inhibition zone diameters reached 14,00-24,00 mm towards both Gram-negative and Gram-positive bacteria. In This means that both extracts have a good antibacterial activity. Regarding yeasts and mold, the diameter of the growth inhibition zone reached 11,00-14,00 mm, which also indicates moderate fungicidal activity of the extracts.

### Conclusion

Our studies indicate that waste of hop cones with 96% ethanol contain quite high amounts of interesting biologically active compound, including flavonoids.

The effectiveness of the proposed solution is to contribute to the program to combat antibiotic resistance, rational use of the resources of the planet and increase the profitability of production. Another important factor in the effective use of biologically active compounds of thyme in feed additives is their effect on technological parameters, namely, productivity, feed conversion, carrier, carrier peak, and others. Natural secondary plant ingredients are an effective alternative.

### References

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