



# 10<sup>th</sup> CONGRESS OF APIDOLOGY

16.-19.09.2024 Tallinn, ESTONIA

## Abstract book



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**Eesti Maaülikool**

Estonian University of Life Sciences

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# Welcome

It is our sincere pleasure to welcome you on the EurBee 10 Congress in Tallinn, Estonia! The Congress is organized by the Estonian University of Life Sciences with assistance by Publicon OÜ.

EurBee is the event, where old and new friends get together to exchange the knowledge of novel scientific findings, associated with honeybees and other pollinators.

We encourage young researchers to meet the leading scientists on their field. Establishing networking and creating new connections is extremely important for sustainable bee research.

The City of Tallinn is the capital of Estonia. Tallinn's Hanseatic old town and nowadays modern architecture is a great mixture for every taste. We recommend you to discover the great Estonian flavors and the interesting culture that Tallinn offers you in abundance on every corner.

Looking further, Estonian nature with its forests, bogs and swamps is unique in the world – all the EurBee guests have the opportunity to experience its magic!

*Experience magic – experience Estonia!*

Sincerely Yours,

**Risto Raimets**

President of EurBee 10



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# Acknowledgements

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### **STRESS-RELATED ENZYME ACTIVITY IN *APIS MELLIFERA IBERIENSIS***

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#### **Abstract**

Climate change is a powerful source of stress for bees as it involves an increase in temperature and changes in precipitation patterns that directly influence relative humidity. Both variables are highly correlated and, when acting in combination, may represent a new independent stressor. Due to the action of these abiotic stressors, alterations in the expression of enzymes vital for bees can occur, which can result in a reduction or increase in their activity. In this work we present a protocol to determine the effect of temperature and relative humidity on the enzyme activity of acetylcholinesterase (AcE) and peroxidase (POD). The heads were separated from the bodies (thorax and abdomen) and they were analyzed separately. The *Apis mellifera iberiensis* were conducted to the following conditions: 35°C/15% RH; 35°C/25% RH; 35°C/50% RH; 35°C/75% RH; 40°C/75% RH; 45°C/25% RH; and 45°C/75% RH.

These effects have been studied as acute (2h) and chronic (2 days) stressors. Both factors, together with the exposure time, influenced the enzyme activity in some of our assays. For example, bees exposed for two days showed an increase in AcE concentration, in contrast to those exposed for only two hours. In another case, the bee heads showed a higher concentration of AcE at 35°C than at 45°C at the same RH (25%). On the other hand, no differences were observed between bodies and heads in the peroxidase enzyme (POD) assay at the same conditions as before, that is to say, bees exposed to 35°C and 25% RH and bees exposed to 45°C and 25% RH.