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Book of Abstracts

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Rectorate of Universidade NOVA de Lisboa

Lisbon, Portugal

NOVA SCHOOL OF SCIENCE & TECHNOLOGY

Dear Participants,

We are thrilled to host you for an exciting gathering of experts, researchers, and industry professionals from around the world to participate in the **12th European Symposium on Biopolymers (ESBP 2025)**.

ESBP2025 is dedicated to advancing knowledge and fostering collaboration in the field of biopolymers. Throughout the conference, you'll have the opportunity to engage in insightful lectures, workshops, poster presentations, and scientific discussions, while also enjoying networking opportunities.

We hope you have a rewarding and inspiring experience. We also encourage you to take some time to explore the beautiful city of Lisbon, rich in culture and history.

Thank you for joining us, and we look forward to making ESBP2025 a memorable and impactful event together!

On behalf of the organizing committee,

Maria Reis

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P76. Potential of Proteins Derived from Invasive Crayfish Shell to Be Utilized for Biopolymer Film Production

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The spiny-cheek crayfish (*Faxonius limosus*), introduced to Europe for aquaculture, has now spread to 22 countries, where it has severely impacted native crayfish due to its high reproductive capacity, disease resistance, and role as a carrier of the crayfish plague. In Serbia, first recorded in 2002 near Apatin, it has since colonized major rivers and is expected to outcompete indigenous species in the coming decades. One possible approach to this situation is targeted harvesting aimed at reducing the population of the invasive crayfish. Driving force for such harvesting could arise from the broad potential for exploitation, with crayfish meat used as food and the shell serving as a source of valuable compounds. Crayfish shells are most commonly used as a source of chitin and chitosan, with deproteination being common step in their extraction. Precisely this process of removing associated proteins from chitin enables the isolation of a high-value protein fraction, which in this study was tested for its film-forming potential [1-3].

Two protein isolates were used in this study. In the first extraction method, crayfish meat was separated without boiling, leaving a higher amount of residual muscle tissue in the shell; in the second method, the meat was separated after brief boiling, which resulted in less residual meat and some protein loss during cooking. Films were prepared by solution casting from both protein isolates at two concentrations (5% and 7.5%), with the addition of 30% glycerol as a plasticizer.

The films were analyzed for their thickness, mechanical properties (tensile strength and elongation at break), and sensitivity to moisture, which included measurements of moisture content, contact angle, swelling percentage, and solubility. Increasing the protein concentration from 5% to 7.5% resulted in thicker and mechanically stronger films; in the cooked shell series this came at the expense of elasticity, while in the uncooked shell series, 7.5% produced a well-balanced film with both good strength and flexibility.

The films of the uncooked shell series, containing a higher protein content, exhibited lower water solubility—an important feature for moisture-resistant packaging—along with greater swelling (indicating a more hydrophilic nature without disintegration), increased thickness, and generally better mechanical stability; in particular, the 7.5 % film demonstrated the best balance of strength and flexibility, making uncooked shell series -based films more suitable for food packaging applications that require both water resistance and mechanical integrity.

References

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