The 6th International Electronic Conference on Foods 28–30 October 2025 | Online



Use of Annurca Apple Peel Flour (Malus domestica) and Cherry Seed Oil in the Formulation of Enriched Crackers

Maria Neve Ombra 1, Florinda Fratianni 1, Beatrice De Giulio 1, Francesca Coppola 2, Filomena Nazzaro 1

1 Institute of Food Sciences, National Research Council (CNR), Via Roma 64, Avellino 83100, Italy

2 Department of Agricultural Sciences, University of Naples Federico II, Piazza Carlo di Borbone 1, Portici (NA), Italy

INTRODUCTION & AIM

The *Annurca* variety of *Malus domestica* is well known for its richness in bioactive compounds such as polyphenols and dietary fibers, which contribute to its potential as a functional food ingredient. Incorporating *Annurca* apple peel powder and cherry seed oil into food formulations may enhance their nutritional and health-promoting properties.

Objective: To develop and evaluate lab-scale cracker prototypes fortified with dried *Annurca* apple peel (5% – S1; 10% – S2) and cold-pressed cherry seed oil.

The study assessed their inhibitory effects on key digestive enzymes, predicted glycaemic Index (pGI), and physical and aromatic stability over storage.

RESULTS & DISCUSSION

Enzyme inhibition: Both fortified crackers significantly inhibited digestive enzymes involved in carbohydrate and lipid metabolism.

IC₅₀ values (mg/g dry weight):

 $_{\circ}$ α -amylase: S1 = 55; S2 = 38

 $_{\circ}$ α -glucosidase: S1 = 118, S2 = 68

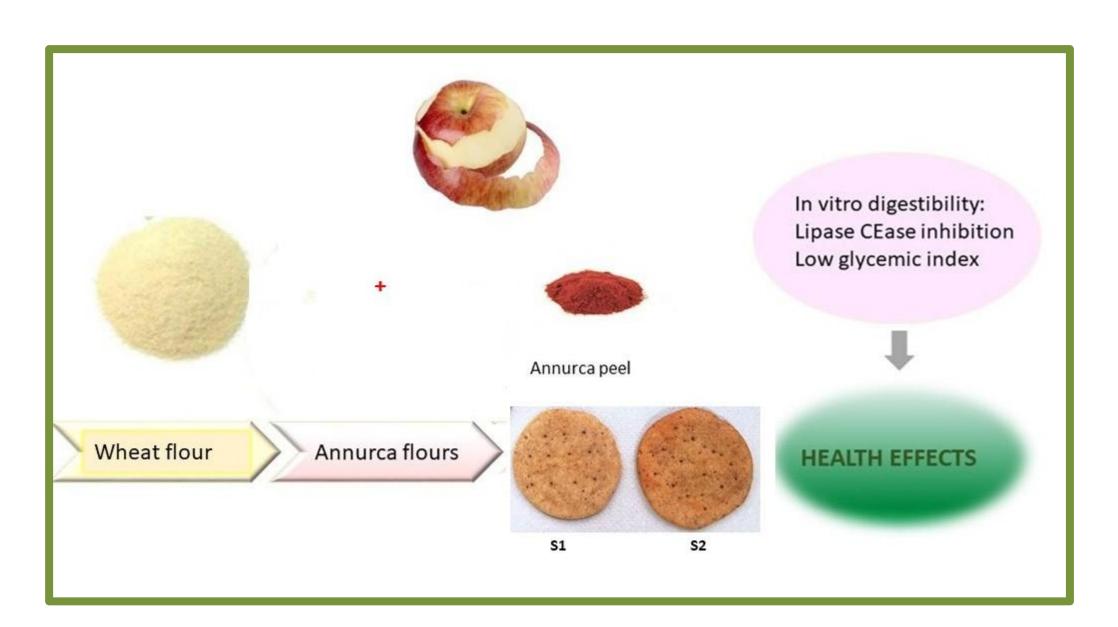
 $_{\circ}$ lipase: S1 = 45, S2 = 35

These data indicate stronger inhibition at higher inclusion levels of apple peel flour.

Predicted glycaemic index: Both S1 and S2 exhibited lower pGI values compared to control samples, suggesting improved potential for glycaemic control.

Functional properties: Water holding capacity (WHC) and oil holding capacity (OHC) showed no significant differences relative to the control, indicating that enrichment did not alter texture-related parameters.

Aroma profile: Electronic nose analysis revealed distinctive volatile patterns after three months of storage, confirming that the addition of *Annurca* components influenced aroma evolution without compromising stability.



CONCLUSION

Crackers enriched with *Annurca* apple peel flour and cherry seed oil demonstrated enhanced enzyme inhibitory activity and reduced predicted glycaemic index, while maintaining desirable physical and aromatic characteristics.

These findings support the use of Annurca-based ingredients as valuable functional components for the formulation of health-oriented bakery products with a stable shelf life.