

Harnessing the Power of Legumes: Plant-Based Antimicrobial Compounds for a Sustainable Future

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The shelf life of food is closely linked to the composition of microorganisms. Various preservation methods have been developed to ensure microbial safety, as well as to maintain the nutritional value and sensory qualities of food. However, due to growing consumer concerns about health and higher demands on quality, the demand for natural antimicrobial agents is increasing. Plant-based antimicrobial substances offer promising alternatives to conventional antibiotics and preservatives. A deeper understanding of the interactions between microbiota and food products can therefore significantly aid food producers in product development and quality assurance.

As the global population continues to rise, the food industry faces the challenge of increasing production and distribution speeds. Currently, food production accounts for 25-30% of global greenhouse gas emissions, leading to heightened scrutiny of our dietary choices. The shift towards plant-based and plant-rich diets, seen as an alternative to traditional diets heavy in animal-based foods, is gaining momentum within the food sector. Several legumes, rich in protein, are particularly well-suited to replace a portion of the meat in our diets.

The project: “Battling unwanted guests: microbiology in legume-based foods”, is funded by Frascati and external fundings, and aims to further investigate an antimicrobial effect observed in legume ingredients. We will explore these effects across various bacterial species and different legume types. We seek to develop industrially relevant processes for producing both an ingredient with antimicrobial activity and a natural extract of antimicrobial compounds, applicable in various food products. This will help improve the quality and shelf-life of many food products in a natural and sustainable manner.

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