



Valorization of Industrial fruits by Products and algae biomass waste: Development of Active Coatings to extend Food shelf life and reduce food losses - VIPACFood



VIPACFood involves a combination of activities across the consortium of 7 research institutions and a government organization spanning Tunisia, Italy, Portugal and Spain. The project seeks to develop safe and affordable postharvest technologies leading to reduced losses, improved food safety and shelf life, reduced packaging amounts used to preserve food which may result in social, environmental and economical benefits. It also has the objective to valorize industrial fruits byproducts and algae biomass waste by extracting active and functional components with high added-value and by designing new transformed products with high appeal, stability and marketability which may help in reducing the volume of byproducts and waste disposed and would have a positive impact on the sustainability of processing industries as well as on the environment. To reach these two main goals, the following activities were performed by the project consortium:

- Recovery of active components from by-products/waste of fruits and waste of agar-agar industry
- Determination of the antioxidant activity of by-products/waste of fruits and waste of agar-agar industry
- Development of active films and coatings incorporating value-added components from fruits by-products for tomatoes
- Development of novel flexible films containing the extracted bioactive compounds
- Evaluation of the effect of coatings incorporating value-added components from tomato by-products type on quality attributes, microbial safety and sensory properties of coated fruits.
- Use of Pulsed Light treatments in combination with bioactive coatings to extend shelf life of tomato fruits

The main results achieved by VIPACFood are the development of experimental protocols based on economical and environmental sustainable processes and technologies for converting stabilized fruit by-products and algae waste into new active components and food products with improved functional and healthy properties. Water-resistant edible films derived from pomace-extracted biopolyester and new bioactive packaging loaded with natural fillers were produced. Pulsed Light technology combined with bioactive coatings decreased tomato surface microbial loading. The exploitation of tomato byproducts is useful to reduce the amount of disposed waste and to obtain value-added compounds by “green” and food-grade extraction methods.

Many communication and dissemination actions have been implemented by the project partners to promote lesson learning and information exchange among all partners and with all beneficiaries (researchers, food processors, government organizations and policy makers, private sector, etc)

In the next months, the following activities will be performed by the project consortium:

- Characterization of extracted bioactive compounds and their incorporation into food matrices to estimate the effects on product quality parameters and shelf life
- Application of the fruits' by-products showing better antioxidant properties on a model food and evaluation of its oxidation status
- Development of delivery systems for the encapsulation of the active components recovered from fruits byproducts
- Evaluation of migration/ diffusion of bioactive substances previously extracted and incorporated in coatings and packaging materials