

Edible coating for seabass preservation

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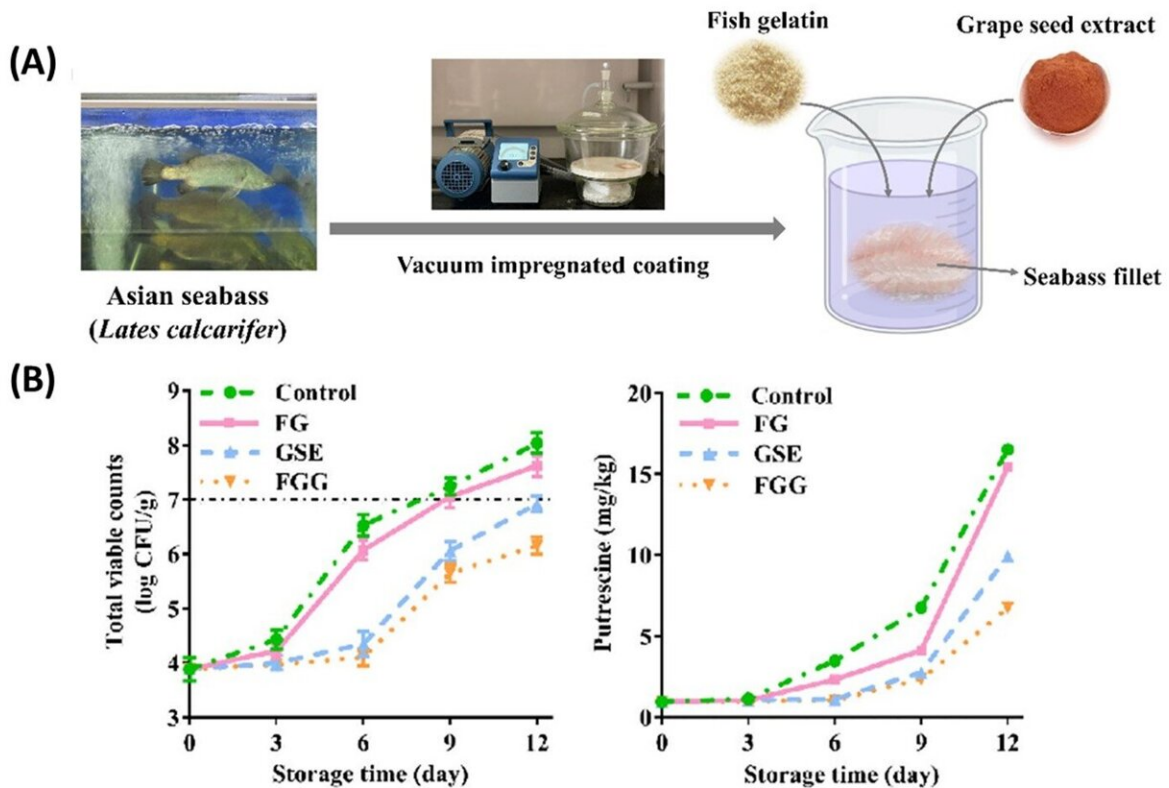


Figure (A) shows a schematic of the process involved in the treatment of fish gelatin and grape seed extract on seabass fillets for the study. (B) The plots show (left) the bacteria population and (right) the biogenic amine content of the treated fish fillet kept at 4 °C over a 12-day chilled storage period. The fish fillet using the combination treatment showed a better preservation effect. [Legend: Control (green): without any treatment; FG (pink): treated with only fish gelatin; GSE (blue): treated with only grape seed extract; FGG (orange): combination treatment.]. Credit: National University of Singapore

Asian seabass (*Lates calcarifer*) is one of the most commonly consumed food fish by Singaporeans. Seabass is loved by many consumers because of its high protein, low fat and ideal fatty acids composition. However, seabass is highly perishable due to the presence of endogenous enzymes and micro-organisms. Storing seabass at 4 degrees Celsius could help preserve the quality and freshness to some extent. However, the loss in the food quality is inevitable and the fish will eventually become unfit for consumption during storage. With increasing demand by consumers for fresh and safe seabass, new preservation strategies are needed to prolong the shelf life of fresh fish while maintaining high food quality.

A research team led by Prof Yang Hongshun from the Department of Food Science and Technology, National University of Singapore has developed a preservation method to maintain the freshness and food safety of seabass filets by coating it with fish gelatin and infusing [grape seed extract](#) (a type of natural additive) into it (see Figure). The vacuum impregnation process, an [emerging technology](#) in the [food industry](#), is used to introduce the grape seed extract into the porous structures of the fish filet. Compared to filets treated separately with only the fish gelatin and the grape seed extract, the combination treatment of [fish gelatin](#) (4%, w/v) and grape seed extract (0.5%, w/v) exhibited a better preservative effect over a 12-day chilled storage period.

Analysis showed that the [fish gelatin](#) acted as a gas/water barrier on the seabass filet which inhibited the loss of moisture during chilled storage. In parallel, the grape seed extract reduced the growth of bacteria and accumulation of biogenic amines on it, resulting in a synergistic preservation effect.

Ms Zhao Xue, a Ph.D. student working on the project, said, "Fish gelatin is gaining in popularity and has been regarded as a promising replacement for mammalian gelatin because of its similarity in functional properties and wide acceptance by consumers who are halal

and kosher. By combining it with grape seed extract, the treatment could lead to safer and more convenient, and cost-effective seafood products for consumers."

"The research findings provide valuable references for the seafood industry for the development of high-quality food products. Application of natural edible coating may one day become a trend to meet consumers' growing preferences for safe, high-quality and clean-labeled foods," added Prof Yang.

More information: Effect of vacuum impregnated fish gelatin and grape seed extract on moisture state, microbiota composition, and quality of chilled seabass filets. *Food Chemistry*, DOI: doi.org/10.1016/j.foodchem.2021.129581 Published: 2021.

Provided by National University of Singapore

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