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Editorial: Applications of biomacromolecules in emulsion-based edible films

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Editorial on the Research Topic
Applications of biomacromolecules in emulsion-based edible films

Packaging is an indispensable and important part of the food industry. Packaging can not only extend the shelf life of food, but also ensure its quality and improve its safety (Siddiqui et al., 2023). Every year, more than half of the global plastic is used in the packaging industry. Therefore, food packaging has become the largest plastic consumption sector (Wani et al., 2023). Conventional commodity plastics such as polypropylene (PP), polyethylene terephthalate (PET), polyvinylchloride (PVC), polystyrene (PS), polyethylene (PE), and polyamide (PA) are currently overwhelming used as packaging materials in both rigid and flexible forms (Alfei et al., 2020). Although these plastics offer the best packaging functions, ease of manufacture and are affordable, their inherent non-biodegradable nature is causing unsurmountable pollution of land, water bodies (rivers, lakes, and ocean) and even air (Alizadeh-Sani et al., 2020). Therefore, there has been growing trend to design and fabricate of sustainable packaging materials from bio-based and biodegradable source.

Bio-macromolecules, such as proteins, polysaccharides and lipids, are typically degraded in the environment mainly due to the metabolism of microorganisms. For this reason, exploring/expanding film-forming properties of bio-macromolecules becoming important missions for food packaging. In addition, these bio-macromolecules-based films are also used to prepare active and intelligent packaging due to their interactions with bio-active components (Perera et al., 2023). At present, bio-macromolecules-based films have proved to be effective to increase the stability of a variety of fresh or processed fruits, vegetables, meat and other food products (Liu et al., 2022; Zhao et al., 2023).

Based on the above development trends, this Research Topic mainly focuses on following themes: (1) Recovering bio-macromolecules from natural resources, including their conversion into film-forming ingredients. For example, konjac flour was used to fabricate nanocoating materials to extend the shelf life of Siamese oranges (Suriati). (2) Development of active packaging by combination of bio-macromolecules and bio-active components. For example, beetroot, curcumin, and garlic extracts were incorporated into chitosan-based films to extend the shelf life of chilled tuna filets (Elsabagh et al.). (3) Improvement of food quality by using bio-macromolecules based materials. For example, the powders from apple peel and orange were used to reduce the oil uptakes of falafel balls (Angor); The spray-dried powders from Jamun juice were used to improve the quality of cheese (Shelke et al.). (4) Application of bio-active components in extending shelf life of

foods. For example, salicylic acid was used to maintain the quality and enhance the storage life of tomato (Baninaiem and Dastjerdi).

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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