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Extraction and encapsulation of phytochemicals from edible flower for application in food system

ABSTRACT

Edible flowers have been consumed from ancient times, and it was believed to deliver medicinal properties. In this study some common edible flowers such as Night jasmine *(Nyctanthus arbortristis)*, Drum stick *(Moringa oleifera)*, Pumpkin *(Cucurbita sp.)* and Nongmangkha *(Phlogacanthus thyrsiflorus)* of Assam, India were taken for studying their different nutritional, phytochemical, antioxidant activity, minerals analysis and screening of phenolic compounds by HPLC etc. In this study phenolic compounds from this flower were extracted by employing microwave assisted extraction (MAE) technique with an ultrasound pretreatment. The optimized extract was taken for encapsulation. Finally functional food products such as gummies and RTS beverages were developed.

The thesis is divided into 7 chapters that are discussed below

Chapter 1 provides an introduction to the overall present research work. It includes a brief overview of edible flowers and their health benefits. Additionally, the extraction of bioactive compounds using novel extraction techniques is highlighted. The benefits of encapsulation of flower extract using the ion gelation technique, along with its application in the development of functional food products, are also discussed.

Chapter 2 presents a comprehensive literature review of the present study. It covers the nutritional and health benefits of edible flowers, along with their safety considerations. Additionally, this chapter provides a detailed review of novel extraction techniques, with a particular emphasis on microwave-assisted extraction and supercritical extraction, for obtaining bioactive compounds from edible flowers and other plant materials. Furthermore, the effects of various processing treatments on enhancing the shelf life of edible flowers and their impact on their physicochemical properties are discussed. The chapter also reviews the ion gelation technique for the encapsulation of bioactive compounds and highlights its benefits. Finally, the development of functional food products using these encapsulated bioactive compounds is also explored.

Extraction and encapsulation of phytochemicals from edible flower for application in food system

by Indrani Chetia

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