

Control of Texture Property of Functional Jelly and Release Rate of Bioactive Component by the Addition of Salts

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Summary

This study aimed to develop a κ -carrageenan gel formulation with a controlled release profile of curcumin by changing the texture properties of the gel. We had greatly enhanced the solubility of the widely studied polyphenol curcumin using the tricomponent system curcumin/ α -glucosyl stevia/polyvinylpyrrolidone. The tri-component system with/without metal chlorides maintained the high solubility of curcumin after five cycles of heating-cooling operations through the interaction between the α -glucosyl stevia micelle-like structure and polyvinylpyrrolidone. The release rate of curcumin in the κ -carrageenan gel formulations was altered by adding metal chlorides. Particularly, changing the concentration of potassium chloride allowed for flexible release of curcumin. Importantly, the κ -carrageenan gel formulation maintained the enhanced solubility of hydrophobic polyphenols, which shows potential for ensuring flexible curcumin-release rates, by changing the texture properties of the gel using metal chlorides.

The controlled release rate of curcumin may lead to improved outcomes by prolonging the antioxidant and anti-inflammatory effects of the curcumin in the field of health care.