**Release Nature of Curcumin and Resveratrol from the Iota Carrageenan-Cyclodextrin Fibers during Simulated Digestion Conditions**

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The health of a society depends on everyone’s health. Ongoing efforts to reduce mortality and promote health have gained significant importance over the years. There has been an emphasis on reducing risk factors at the individual and societal levels. Several conscious efforts are helping to improve health and increase the average life expectancy. The shift by the current generation to healthy eating and living habits is also encouraging. However, many lingering health issues, such as heart disease, stroke, high blood pressure, diabetes, obesity, and cancer, continue to jeopardize human health. To this end, foods enriched with bioactive compounds (BCs) can help prevent and treat chronic diseases and improve human health. However, incorporating BCs into foods is challenging due to their instability during processing and storage conditions. Toward this end, carriers would be handy, mainly based on the Generally Recognized As Safe materials. Herein, iota-carrageenan (IC), a thermo-reversible gelling hydrocolloid with widespread food and pharmaceutical applications, and BCs Curcumin and Resveratrol have been encapsulated in the organized network of IC fibers in the presence of Cyclodextrins (CDs) and NaCl. Curcumin and resveratrol release nature has been tested in the aqueous, simulated gastric, and intestinal conditions. The results reveal that IC fibers maintain a stable network structure. The amount of salt and the CD type dictate the total curcumin and resveratrol loading in the IC fibers. The fibers with 50 mM salt and 0.1 g/L βCD released 1.2 mg of curcumin per 1 g of IC after 3 hours in aqueous conditions but only 0.8 mg during the gastric conditions that further receded to 0.136 mg in intestinal conditions suggesting a pH-dependent release nature. In the case of resveratrol, fibers with 100 mM salt and 0.5 g/L β CD recorded the highest amount of 2.6 mg in the gastric conditions and 2.2 mg in the intestinal conditions by the IC with 50 mM salt (IC50) and 0.5 g/L βCD. The release nature follows the first order and Korsmeyer-Peppas kinetics. The outcome offers an elegant opportunity to develop value-added delivery systems of bioactive compounds, in particular, and health-promoting and disease-preventing compounds, in general, based on ordered hydrocolloid networks.