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Vitamin B complex encapsulation in bacterial nanocellulose: A novel system for heat and chemical stabilization in food products

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Bacterial nanocellulose (BNC) is a nanomaterial with potential use in nano food and could be used as thermal protector of micronutrients even in food formulations as fiber dietary, thickening and water-binding agent. Vitamins of B complex are among micronutrients with possibility to protection nonetheless due to their heat sensitiveness, they degrade during cooking. Vitamins of B complex are precursors of gene redox reactions. A low intake of them can produce diseases as pellagra and cancer. With this background, the aim of this research is to evaluate the use of BNC as a thermal protection agent for vitamin B₁, B₂, B₃ and B. Vitamins were added in a suspension of BNC at 0.5 wt% and dried by spray drying. Thermo gravimetrical analysis (TGA) was carried out to compare the thermal behavior of these vitamins in the presence or not of BNC. FTIR and adsorption were used to establish interactions between bacterial nano-cellulose and vitamins. Adsorption was determinates by formation of monolayer, multilayer and free Gibbs energy confirming different interactions. Scanning electron microscopy (SEM), was used in order to observe the morphology showing vitamins covering fibers of bacterial nanocellulose. BNC enhances the heat stability of the vitamins up to 329°C in onset temperature due different interactions which make possible their use in nano food.

Biography

Diego Mauricio Sánchez Osorno is a Food Engineer of Corporación Universitaria Lasallista Colombia and received his MS in Nutrition and Health from the University Lasalle Beauvais France in 2014. In 2014, he started as PhD student at Universidad Pontificia Bolivariana Colombia. He writes and presents widely on issues of polymers in food, nanomaterials in food, nutritional food and is the author of *Manual for the Agro-Industrial Exploitation of Small Fruits*.

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