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Solubility and Dissolution of Food Ingredients: Solid Dispersion Technology

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Abstract

Poor solubility of ingredients and bioactive compounds remains one major problem in the food industry. Many ingredients have demonstrated great potential to be utilized in the development of functional foods. Their application however in this, has been largely limited due to their poor solubility in aqueous systems. Therefore, there is a need to address and overcome this challenge. To overcome this problem, various technologies have been developed. Among them, solid dispersion technology has been identified as an efficient and recently most common technology for solubility and dissolution enhancement. It also helps with the mitigation and reduction of protein bitterness and off-flavors in the beverage and food industry. The stability and extent of solubility improvement are largely dependent upon the type of polymeric carriers employed to develop solid dispersion. Therefore, polymeric carriers incorporated in solid dispersion technologies are typically hydrophilic, generally recognized as safe (GRAS), and exhibit compound compatibility. These include gum arabic, polyvinylpyrrolidone (PVP), cyclodextrins, and polyethylene glycol (PEG) among others, and they can be employed individually or more effectively when synergized. A great deal of knowledge has been accumulated about solid dispersions; however, research in the application of solid dispersion technology in the food industry has been limited. This paper reviews the solid dispersion technology, preparation techniques, application of solid dispersions in food ingredients and bioactive compounds, benefits of the technology, and aspects to consider in its preparation.

Biography: Nontsikelelo Noxolo Tafu

Nontsikelelo Noxolo Tafu is a final year Masters student in Food science and Technology at CPUT. My research explores underutilized crops, and solid dispersion technology to improve functional properties of functional ingredients, and development of functional foods/beverages/supplements.