

Nestle applies quantum mechanics to optimize food taste, texture, nutrition

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Researchers from Nestle and the University of California have investigated the physics of food structure, and their results may help scientists create foods with optimal stability, nutrient delivery, flavors and aromas.

Most foods have very complex structures due to their many components. For example, a single food has a combination of proteins, vitamins, minerals, and carbohydrates that make determining food structure very challenging.

Nevertheless, a food's structure plays an important role in defining many of the characteristics of food, such as taste and nutrition. For instance, in

order to release nutrients into the body, the food structure must take on a certain complex arrangement.

In this study, which is published in *Physical Review Letters*, the scientists studied how water molecules interact with lipids, which are fat-soluble molecules such as fats and oils. These interactions could serve as a physical basis for understanding and defining the structure of different foods, enabling scientists to assemble the various components in an optimal organized structure.

Until now, no quantitative theoretical framework had been established to understand the structural changes that occur in lipid-water interactions under varying conditions. Now, the researchers have developed a thermodynamic model that describes the phase sequences that take place in solutions of lipids and water. To calculate these phase sequences, the scientists used a quantum mechanical theory called self-consistent field theory.

In the future, the researchers will investigate how to apply this understanding of food structure to optimize foods for different specific purposes and on an industrial scale.

via: [NutraIngredients-USA.com](https://www.nutraingredients-usa.com)

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