Marinalg International
Scientific Statement in Response to "Food Additive Mixtures and Type 2 Diabetes Incidence: Results from the NutriNet-Santé Prospective Cohort"

A recent observational study by de la Garanderie, et al., entitled "Food Additive Mixtures and Type 2 Diabetes Incidence: Results from the NutriNet-Santé Prospective Cohort," utilized data from the French NutriNet-Santé cohort in order to identify the most common food additive mixtures, and investigate their associations with type 2 diabetes incidence. The authors reported that two out of the five identified food additive mixtures were associated with higher type 2 diabetes incidence:

- Modified starches, pectin, guar gum, carrageenan, polyphosphates, potassium sorbates, curcumin, and xanthan gum
- Citric acid, sodium citrates, phosphoric acid, sulphite ammonia caramel, acesulfame-K, aspartame, sucralose, arabic gum, malic acid, carnauba wax, paprika extract, anthocyanins, guar gum, and pectin.

The authors conclude that these findings suggest that it may be of interest to consider potential interaction/synergistic/antagonist effects of mixtures/combinations of food additives when assessing the safety of food additives, and they support public health recommendations to limit exposure to ultra processed foods (UPF) and their nonessential additives. Further, they note that experimental research is needed to depict underlying mechanisms.

While observational studies may be used to correlate a particular food or diet with a specific outcome, they cannot and do not establish cause and effect. Additionally, despite the longitudinal design and large sample size of the study, there are several weaknesses limiting the strength of its findings. Marinalg International stands by the numerous safety and regulatory reviews demonstrating carrageenan is a safe and effective food ingredient.

Association is Not Causation
Given the observational nature of the study design, causal links cannot be established. Further, the likelihood of confounding bias due to variables/factors that cannot be controlled for in an observational study must be considered when interpreting these results. Lastly, like other non-communicable diseases, type 2 diabetes is widely noted as a multifactorial condition and one specific nutritional factor is not likely to contribute to the increased incidence in a given population.

Study Findings Cannot be Generalized
While often utilized for its size, accessibility and the myriad of included nutrition-related variables and health outcomes, the limitations of the French NutriNet-Santé cohort are also widely-recognized. As there are noted differences between cohort participants and the general population (French or otherwise), the results of this study cannot and should not be extrapolated to the general population. The participant sample included mostly women, those who were highly educated, of higher socio-economic status and exhibited generally healthy behaviors.

Self-Reported Data May Lead to Bias

For the cohort utilized in this study, usual dietary intakes were assessed at inclusion and then every 6 months over the course of 2 years, using a series of 3 non-consecutive web-based 24-h dietary records, randomly assigned over a 2-week period (2 weekdays and 1 weekend day). Not only is this type of design unable to account for changes over time, self-reported intake data is notoriously susceptible to recall bias, misreporting, etc. The current study relies on this data to estimate emulsifier intake. As emulsifiers are found in a wide variety of foods, attributing the observed effects to these specific compounds, as opposed to specific dietary patterns, is not possible.

Permitted Emulsifiers are Recognized as Safe

Scientific and regulatory authorities from around the world have reviewed available scientific literature and safety data and have determined that emulsifiers permitted for use in food, including carrageenan, are safe. Carrageenan has been reviewed and approved by the U.S. Food and Drug Administration, the Scientific Committee for Food in the European Community – now the European Union, the Japan Ministry of Health, the Brazilian Health Surveillance Agency, Health Canada, Food Standards Australia/New Zealand, the China Ministry of Health and others. In addition, the Joint FAO/WHO Expert Committee on Food Additives (JECFA)—an international expert scientific committee administered jointly by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO)—has also determined carrageenan is safe for use in all populations, including very young infants.

While additional scientific research on food ingredients is always welcomed, Marinalg International stands with the many scientific and regulatory bodies that have reviewed carrageenan and determined it to be safe for use in foods.

Resources:

THE EU SAFETY ASSESSMENT OF FOOD CHEMICAL MIXTURES (Update 2022)

THE EU SAFETY ASSESSMENT OF FOOD CHEMICAL MIXTURES FOCUS ON FOOD ADDITIVES AND THEIR POTENTIAL COMBINED USES

Food and Agriculture Organization of the United Nations. Food Safety and Quality. *Joint FAO/WHO Expert Committee on Food Additives (JECFA).* *https://www.fao.org/food-safety/scientific-advice/jecfa/en/*