

# How Food Emulsifiers Increases Toxicity of Process Contaminants

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## **ABSTRACT:**

Emulsifiers are common food additives that are employed extensively in the food industry. They are primarily used to promote formation and stability of emulsions in processed food. Food emulsifiers were generally regarded to have low toxicity. Recent studies showed that emulsifiers can promote inflammation, colitis, metabolic syndrome and even carcinogenesis through altering gut microbiota community. Food emulsifiers often can be found in the same ultra-processed food products as another common food contaminant acrylamide. Recently acrylamide has been found to upset lipid metabolism, induce adipocyte differentiation and potentially obesity. It is also known to be immunotoxic, harming the spleen and inducing inflammation in various cell types. Given that they occur together in many food products, their co-exposure can be anticipated. Interestingly, acrylamide and food emulsifiers can create similar toxicity but with different mechanisms, suggesting that they may interact synergistically and increase in resultant toxicity. In this presentation we will present data showing that food emulsifiers Tween 80 and glycerol monostearate increased absorption and toxicity of acrylamide in cells and mice model, contributing to increased chemical uptake, increased gut permeability, higher inflammatory cytokines, higher oxidative stress and higher weight gain. These data suggested that emulsifiers and acrylamide interact in a complex manner that requires further study.