IUFoST | International Union of Food Science and Technology
Strengthening Global Food Science and Technology for Humanity

# **N**utritional **O**ptimization **U**nder **R**esponsible **I**ngredient **S**election and **H**andling **( NOURISH )**

## The Problem with Current Food Classification

You've probably heard about "ultra-processed foods" and how they might be harmful to your health. This concept stems from a system called NOVA, which aims to categorize foods based on their level of processing. However, NOVA's selection criteria are not actually based on processing but rather on formulation. Moreover, these formulation criteria are ambiguous and not measurable, leading to disagreement among scientists and confusion among consumers.

## What IUFoST Proposed

The International Union of Food Science and Technology (IUFoST) established a task force to develop a science-based, unambiguous method for classifying processed foods. They created a scheme that separates the impacts of formulation and processing on a food product's nutritional value - a more precise approach suitable as a toolbox for refining existing food classification systems /1/. This was originally denoted as the IF&PC (IUFoST Formulation & Processing Classification) scheme. Here this groundbreaking methodology is renamed **NOURISH** (**N**utritional **O**ptimization **U**nder **R**esponsible **I**ngredient **S**election and **H**andling) to better communicate its purpose and accessibility.

## Innovation: Separating and quantifying Two Important Factors

The breakthrough insight was recognizing that two distinct key aspects affect a food's nutritional value:

1. **Formulation (F)**: What ingredients are included in the food and in what quantities
2. **Processing (P)**: What happens to those ingredients during manufacturing

Previous systems, including NOVA, conflated these two factors, creating confusion. The new system treats them separately, enabling clearer quantitative analysis.

## How It Works

**Step 1: Measuring Formulation**
The NOURISH scheme begins by examining the nutrients and components in a food based on its recipe, similar to existing nutrition profiling methods. Think of this as the "starting point"—if you mixed all the ingredients together without any processing, what nutritional value would you have?

**Step 2: Measuring Processing Impact**
Next, NOURISH measures how ingredient handling through processing changes the nutritional value. Some processing methods might remove nutrients (such as pasteurizing or sterilizing heat treatments), while others might make nutrients more bioavailable (such as thermal processes releasing bioactives), and yet others may reduce anti-nutrients (such as enzymatic or fermentation processing).

**Step 3: Creating Scores**
The NOURISH scheme uses the Nutrient Rich Food Index (NRF) as an exemplary foundation for nutrition profiling. The NRF calculates a nutrition score of food based on the beneficial nutrients they contain versus harmful components that should be limited. Processing impact is calculated by comparing the NRF score before and after processing, providing a ΔNRF difference value that indicates the processing impact on the product's nutritional value. A derived NOURISH-map displays NRF values for formulation and shows how these change (ΔNRF) through processing.

**Step 4: The FPFI Score**
The formulation (NRF) and processing (ΔNRF) scores can be recombined into a coupled "Formulation and Processing Food Index" (FPFI) score when relevant, for example, for labeling purposes.

## Why This Matters

**For Consumers**
Instead of vague and potentially misleading terms like "ultra-processed," you receive clear, numerical scores that indicate how nutritious a food's ingredient selection is and how processing has affected it. A food might have excellent ingredients (high formulation score) but lose nutrients during processing, or it might have mediocre ingredients but utilize smart processing that enhances nutritional value.

**For Researchers**
This system enables more rigorous scientific studies. Scientists can precisely design food with desirable nutrition value by working with ingredients and processing, since they can now separate the effects of formulation (ingredients/recipe) from the effects of processing. This will allow for creating a more accurate quantitative foundation for root cause studies of health-supporting or disease risk aspects of food products and diets.

**For Food Companies**
Companies can use these scores to improve their products by optimizing both ingredient selection and processing methods.

## The Bottom Line

The IUFoST task force's NOURISH scheme replaces guesswork with science. Instead of broadly labeling foods as "good" or "bad" based on unclear processing criteria, it provides specific, measurable scores that account for both what's in food and how it's made. This gives everyone -from consumers making grocery choices to scientists studying nutrition effects on health -better tools for understanding the true nutritional value of processed foods.

The goal is to help create and identify processed foods that are genuinely nutritious and beneficial for health.

Related Publications:

/1/ Ahrné, L., Chen, H., Henry, C.J., Kim H-S., Schneeman B. & Windhab E.J. (2025). Defining the role of processing in food classification systems - the IUFoST formulation & processing approach. ***npj Science of Food* 9, 56 (2025).** https://doi.org/10.1038/s41538-025-00395-x
/2/ Windhab E.J., Ahrné, L., Chen, H., Henry, C.J., Kim H-S., Schneeman B. (2025); "The IF&PC / NOURISH scheme"; *IUFoST Scientific Information Bulletin (SIB) / task force special series, available online September 2025*; https://iufost.org