

CLEAN LABEL PRODUCT DEVELOPMENT: INVOLVING ALL STAKEHOLDERS



TNO innovation
for life

At TNO, we are in a central position to offer the critical mass needed to unite stakeholders in the food manufacturing sector and to assist them in their endeavours to deliver 'clean label' products. Our clean label activities overlap with those carried out by parties involved in the food production chain, be they ingredient suppliers, food manufacturers, regulatory agencies, retailers or consumers.

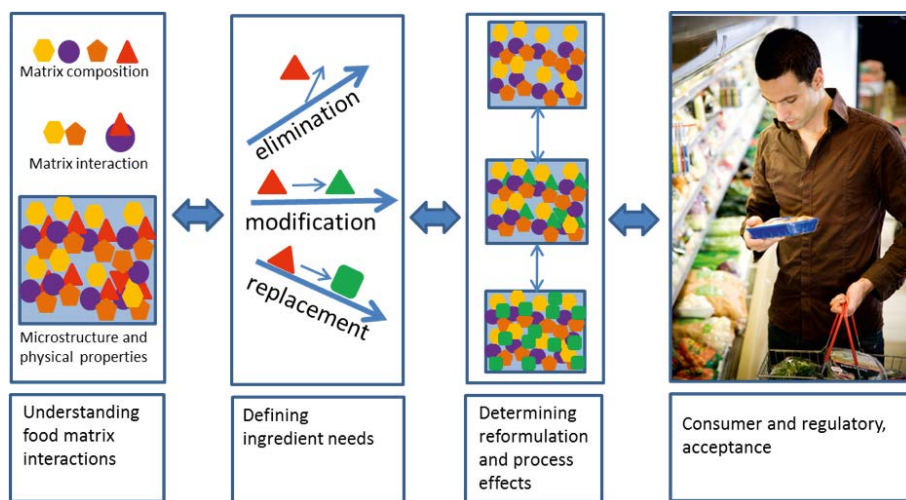
We can offer these groups the platform they need to find the right balance in discussions about the development of clean labels. This will enable stakeholders to learn from each other, an important aspect in clean labelling. In addition, they will learn what goes on in other fields and disciplines and promote the exchange of best practices.

TNO SUPPORT

Using a science-based approach, we support manufacturers in designing tailor-made products with clever combinations of ingredients and non-chemical processing treatments. We also support ingredient suppliers in determining which ingredients are suitable for a cleaner label and which ones need to be replaced. We assist regulatory agencies in their efforts to maintain product safety and stability during the lifecycle of the food product.



Finally, our work benefits retailers and consumers. These groups increasingly often seek to sell and buy honest, clean and natural products that have retained the same properties that they appreciated in earlier versions of the product, for instance in terms of taste, smell or texture.



Systematic science-based approach for addressing challenges in developing products with clean labels

ASSISTING PRODUCT DEVELOPERS: TNO STRATEGY

For the development of clean label food products, developers need practical and cost-effective solutions. At TNO, we approach product development in top-down as well as bottom-up style, a process that results in a thorough and systematic understanding of the ways in which different ingredients interact at various length scales in specific food matrices. In turn, this enables us to design reformulation methods that are both robust and cost-effective.

Our proven reformulation approach can be used as a starting point for the development of any clean label product. It starts with translating the product into a model food system. Thanks to our extensive knowledge of its constituents, their interactions and their effects on product properties and product process-ability, this matrix is an integral part of our work to gain an understanding of the functionalities of specific food ingredients.

We then apply specific strategies or technological interventions, for instance via ingredient elimination, replacement or process modification, and subsequently compare them with appropriate benchmarks. This process is repeated until the desired properties are obtained. To tackle microbial spoilage during a product's shelf life, we also use microbial genomic tools to screen potential natural ingredients which can replace unclean preservatives.

INGREDIENT MODIFICATION AND CONSUMER PERCEPTIONS

In today's food sector, we are witnessing a clear move away from chemical modification. To illustrate: many product developers are currently replacing chemically modified starches with starches that are physically modified, a process for which we have designed various physical modification techniques to control ingredient functionality. To identify sustainable ingredient alternatives—a crucial aspect of clean labelling—we have developed a number of high-throughput screening methods for various ingredient functionalities. We are also witnessing an increasing need on the part of consumers for clearer and more easily understandable food ingredient labels, so that they can make well-informed and conscious decisions about the food products they choose to buy. This means that consumer familiarity with most, or preferably all, of a product's ingredients is an important issue to address in the development of clean label products. This may, for instance, concern ingredients that consumers would normally use in their own kitchens as well as ingredients with names that they are not familiar with. By joining forces, food manufacturing companies and TNO can play an important role in this area.

INVITING STAKEHOLDERS

At TNO, we are currently running a three-year programme concerned with the development of clean label products. To enhance the platform we can offer all stakeholders in the food industry, we invite representatives from the various sectors to join our efforts and to address today's increasing demand for honest, sustainable and clean products.

TNO.NL

TNO HEALTHY LIVING

TNO initiates technological and societal innovation for healthy living and a dynamic society.

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