



THE CLIENTS PROBLEM

With a global push towards healthier beverages, requiring a reduced level of sugar or higher proportions of “clean-label” ingredients, manufacturers need to understand how mouthfeel (an important consumer delighting parameter) is impacted when well known, well understood traditional ingredients are replaced.



Our client, a major soft drinks manufacturer, approached Sagentia to develop a range of analytical methodologies to understand how novel ingredients impact the mouthfeel of their beverages. There was also the desire for these analytical methodologies to be used as part of a predictive tool for future formulation work, minimising the need to perform costly and time-consuming consumer and sensory work to validate what are often only small changes to formulations.

HOW WE HELPED

The Applied Science team, in partnership with our Consumer and Sensory Insights team, first identified the attributes the consumers use to describe the mouthfeel of both carbonated and still beverages. For each of the prioritised sensory attributes, our scientists conducted an in-depth review across academic literature, intellectual property, instrument manufacturers’ literature, and relevant industry publications, to identify a range of analytical methodologies that could be correlated to these attributes *in vitro*.

In order to properly prioritise relevant methodologies, it was critical to understand the impact of extraneous parameters such as interaction with saliva (and salivary proteins) through consumption, whether the beverage should be carbonated or de-carbonated during measurement, and the functionality of the ingredients within the beverage.

Our scientists identified a range of tribology and rheology techniques as the core methodologies for characterisation, as these conditions can easily be replicated (temperature, representative surface chemistry, and salivary interactions included) and the

analytical methods could be easily replicated by our client using existing equipment.

In parallel, a design of experiments was defined that would describe interactions between the ingredients, and how this would impact mouthfeel parameters. Our team then used mathematical models to correlate the data generated from analytical methods with static and temporal profiles from our in-house expert sensory panel, and consumer acceptance testing.

THE OUTCOME

Our client gained a core set of analytical methodologies, correlated via mathematical modelling to expert sensory analysis, that could be used to predict the mouthfeel parameters of new formulations via simple laboratory experiments. This reduced the need to embark on costly and time consuming expert sensory and consumer acceptance tests, dramatically shortening development time of new product variants, enabling the client to respond quickly to regulatory changes, supply chain issues or changing consumer preferences.