

“The ability to accurately predict which flavour will appeal to consumers is critical to food and beverage manufacturers around the world. Getting this right has significant economic value and the knowledge gained provides additional focus for Givaudan’s science & technology programme.”

Flavour Division

Creation of high performance flavour systems requires a combination of artistry and technology. Leadership in the development of innovative solutions is considered essential to deliver differentiated and sustainable product offerings making foods and beverages taste better and improving quality of life.

The ability to accurately predict which flavour properties will appeal to consumers is critical to food and beverage manufacturers around the world. Getting this right has significant economic value and the knowledge gained provides additional focus for Givaudan’s science & technology programme.

Aided by its SmartTools sensory measurement technology, Givaudan sensory science, in conjunction with our analytical profiling team, continues to deliver a significant body of information on key global flavours as diverse as citrus, vanilla, mint, tea, coffee, dairy, cheese, beef and chicken. These consumer insights have resulted in a series of TasteEssentials® flavour product categories which address application-specific customer requirements from soups, sauces and snacks to beverages, ready-meals and foodservice menu items.

The emotional reaction to flavour stimuli can have a significant impact on purchasing decisions. Techniques to measure people’s cognitive response are being investigated to better calibrate the effect of emotion on decision-making. Investigation of genetic drivers of sensitivity to taste are of interest since these could suggest a rationale for dietary preference. A major study is under way with the USA National Institutes of Health (NIH) to provide detailed knowledge of this effect and there has been widespread interest in the initial findings across the scientific community.

Delivery of the appropriate flavour impression at the right moment with the precision required is a critical factor for marketplace success. Patented technologies within our PureDelivery® flavour encapsulation platform has employed advances in material science to address stability, authenticity and release dynamics which result in enhanced performance in customer food and beverage products.

Predictive modelling and simulation of materials interactions have accelerated the development of unique solutions such as our proprietary system for sequential release of distinct flavours in chewing gum applications. In addition, magnification of aroma release can be a source of positive product differentiation. The broad spectrum of application-tuned core encapsulation technologies available suggested a number of formula adaptations for fruitful development of engineered release of volatiles in food products that Givaudan is currently investigating.

A key element of our innovation strategy has been the development of a strong pipeline of unique, proprietary ingredients. A focused natural products discovery programme leverages TasteTrek™ expertise to investigate new sensory space –whether molecules arise from exotic botanicals in the rainforest or traditional cooking techniques. Our association with the University of California, Riverside has created an opportunity to explore and sustain the biodiversity of its citrus grove. The outcome has been identification of several orange-, lemon- and grapefruit-based molecules of interest for further development as ingredients in beverages and other applications.

Effective modification of taste attributes has become a major flavour development activity. There is increased global demand for products with lower levels of salt, sugar and fat leading to interest in salt reduction technology, sweetness modulation materials and bitterness-masking agents. Our investigation of solutions includes a rational design approach which utilises knowledge of molecular biology to integrate taste receptor-based bioassays into probes for novel tastant molecules. Powerful cheminformatics tools have been designed to expand upon this effort with in-silico modelling capabilities. Expertise in organic chemistry, biotechnology and process engineering are employed to translate these discoveries into TasteSolutions® for food and beverage applications.

Advanced bioprocesses such as fermentation and enzyme catalysis have become especially powerful tools for the creation of building blocks which address the growing demand for natural flavourants. In 2010, four novel taste molecules received the generally recognised as safe, or GRAS approval from the Flavour and Extract Manufacturers Association (FEMA) targeting sweetness modulation and umami character. These are expected to have a significant impact on future development efforts.

Body and mouthfeel deficiencies surface when healthy taste modulation alternatives are introduced. Therefore, the development of ingredients which can correct these problems has been a targeted area of investigation. A building block collection containing a series of dairy-type natural bioingredients to provide richness and body have been developed to rebalance finished products.

Besides having a strong internal discovery team, Givaudan has pursued open innovation objectives through collaboration with external academic and industrial partners. These networks focus on adjacent and complementary technologies and also serve as windows to emerging technologies with potential value.



Flavourist training

The area of taste technology which relates to salt, sugar, MSG and fat reduction poses considerable challenges to flavourists trying to reduce the level of these ingredients in foods and beverages – while maintaining the great tastes that consumers expect. Givaudan has established centres of excellence in Naarden, the Netherlands, Cincinnati, USA and Dübendorf, Switzerland to train experts who then acquire the expertise to train colleagues in Asia, Latin America and beyond. The new skills acquired are enabling lower-salt/sugar/fat/ MSG flavours to be created for new products for which consumers express a preference over the standard product. More than 25 flavourists have received intensive training which lasts from several weeks to several months.