

Enhancing drug formulations with specialty excipients

Take your drug product to another level with our expertise in vitamins, vitamin derivatives and taste solutions

The power of specialty ingredients and excipients

Drug formulation is growing more complex, with increasingly challenging active pharmaceutical ingredient (API) properties, drug delivery systems, and patient population requirements.

This is driving the adoption of more innovative approaches, where specialty ingredients and excipients play a multifaceted role. Selecting the right ingredients can contribute to drug

stability, solubility, bioavailability, and taste, and their optimization has become paramount in overcoming formulation hurdles.

Our offering – supporting formulation in pharma

We offer a range of specialty excipients – including vitamins, vitamin derivatives, flavors, and taste modulators – and partner with our customers to find the right solution for the development of safe and effective drug formulations.

Our unparalleled expertise and knowledge of vitamins and taste solutions make us perfectly placed to lead the science on

their application in pharmaceutical drug products and processes.

Products

Our specialty ingredients include GMP-compliant vitamins, vitamin derivatives, flavor tonalities, and taste modulators to meet the specific needs of your formulation.

Customized solutions

We know that each customer faces very specific formulation challenges and regulatory hurdles. We can support formulation of both small molecule and biologics products, and provide the necessary regulatory backing for each individual need. From designing custom-made flavours to fine-tuning our bitterness technologies for specific APIs, we develop tailored solutions that meet the unique requirements of each formulation.

Expert services

Our comprehensive product portfolio is supported by expert services covering innovation, R&D, and marketing insights, and application and technical support, including sensory evaluation through our trained sensory panels. Combined with our quality and regulatory expertise, we provide full support every step of the way.



Vitamin excipients in small molecule formulations (oral and parenteral)

Vitamin excipients have a long history of pharmaceutical use across oral and parenteral formulations, with established safety profiles and multifunctional properties that support formulation performance. Vitamins are well known for their antioxidant activity, helping to protect the API from oxidation to improve formulation stability and extend product shelf life.

Nitrosamine risk mitigation

The addition of antioxidants – like ascorbic acid (vitamin C) or alpha-tocopherol (vitamin E) – as excipients to drug formulations is proven to be a safe and effective strategy to mitigate nitrosamine formation.^{1,2} These multifunctional vitamin excipients act as nitrite scavengers, helping to inhibit the reactions that lead to nitrosamine formation. We can support you with nitrosamine risk mitigation strategies, using a science-backed approach that is recommended by the U.S. Food and Drug Administration (FDA).

Driving innovation in biologics

We understand parenteral preparations and excipients for the biologics space, and already supply high-quality vitamin excipients and vitamin derivatives – manufactured in GMP-certified facilities – that maximize product and process performance. As this field continues to grow – including the development of advanced therapy medicinal products – new applications for vitamins and vitamin derivatives continue to emerge, expanding their role in biologic formulations.

Example applications of vitamins in biologic preparations

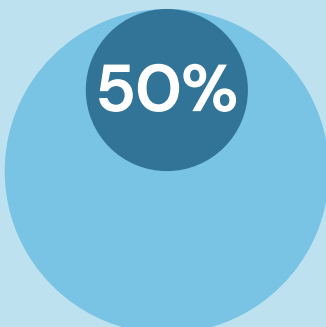
- Preventing protein aggregation
- Reducing viscosity in monoclonal antibody solutions
- Acting as adjuvants in vaccines
- Providing nutrients to cell cultures for biopharma processing



Improving patient compliance through flavors and taste modulation solutions

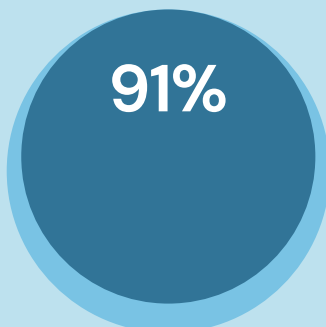
The demand for innovative, patient-friendly dosage forms that enhance patient compliance is rising, driven by factors including convenience, pill fatigue, and dysphagia.

Galenic forms – such as orally disintegrating tablets, orodispersible films, and oral liquids – require a more careful taste design, due to the inherent contact of all the formulation components with the tongue and taste receptors prior to swallowing. We offer a wide portfolio of flavor tonalities and cutting-edge taste modulation solutions for solid and liquid formulations, backed by years of research into the science of taste perception. We partner with our customers to develop palatable solutions for their products that can help to improve patient convenience and therapy adherence.



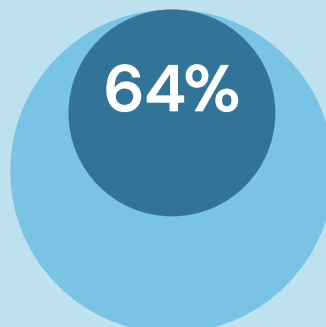
50%

50% of people will experience difficulties with swallowing medications at some time in their life³



91%

91% of US pediatricians reported unpleasant medication taste as a key barrier to patient compliance⁴



64%

64% of 14-year-olds surveyed said disliking the taste was the main reason they find some medicines difficult to take⁵



Our offering

Flavors and extracts across a broad range of tonalities, including citrus, mint, vanilla, brown notes, and fruits..

Encapsulation technologies that provide a longer shelf life and resistance to moisture, oxygen, and higher temperatures, as well as optimized flavor release.

Taste modulators – such as bitter blockers, off-notes maskers, and sensates, as well as sweetness and mouthfeel enhancers – and a proprietary receptor-based discovery technology that enables fast screening and creation of taste receptor-specific maskers and blockers.

ModulaSENSE® Bitter: targeting drug bitterness at the receptor level
We've developed a breakthrough technology that addresses the complex challenges of bitterness in oral drug formulations. ModulaSENSE® Bitter uses our understanding of bitter taste receptors to create targeted, formulation-specific bitterness solutions. Rather than relying on generic masking, it combines blockers, maskers, and sweeteners with receptor-based insights to create targeted, formulation-specific solutions. The technology is applied through a multi-step, scientific workflow – backed by expert panels and comprehensive technical documentation – and is applicable across a wide range of APIs and oral dosage forms. The result is improved palatability through targeted bitterness reduction, supporting patient acceptance across demographics, including pediatric and elderly populations.

Why dsm-firmenich?



Innovation delivered by experts

Our range of specialty ingredients and excipients, flavor tonalities, and taste modulators is backed by over 80 years of expertise in scientific discovery and innovation. Our industry-leading capabilities include sensory analysis of pharmaceutical prototypes and receptor-based research. With extensive regulatory and technical know-how, we help our customers to find the right solution for the development of safe and effective drug formulations. Through our customized solutions, we are ready to create successful formulations together.

Through partnership and collaboration

We work closely with our customers to enable drug products to reach their full potential. Our comprehensive product portfolio is supported by expert services covering innovation, R&D, marketing insights, sensory evaluation through our trained sensory panels, application and technical support, and quality and regulatory expertise. Together, these services enhance the performance of drug product formulations, helping our customers to enter the market with confidence or expand into new geographies.

With quality and reliability

All our products are manufactured at our GMP-certified facilities, strategically located around the world to provide reliable, secure, and consistent supply. We meet the highest GDP standards for safety, compliance, and sustainability across our global network, minimizing disruption risks and supporting your drug pipeline. Our global regulatory expertise and stringent quality policies mean that we can supply both high quality products and the supporting documentation that is essential in the pharmaceutical environment.

For a sustainable future

Sustainability is embedded in our culture, and we have been awarded an EcoVadis Platinum certification. Our unique ImpAct Card™ program transparently communicates the environmental impact on an ingredient level, including the calculated carbon and water footprints, renewable energy usage, traceability, certification, and social impact. We help our customers to achieve their sustainability goals through our responsible, ethical operating practices and in-house life cycle assessment expertise.

1. Nanda KK, et al. Inhibition of N-Nitrosamine Formation in Drug Products: A Model Study. J Pharm Sci. 110(12):3773–3775 (2021).
2. Homšak M, et al. Assessment of a Diverse Array of Nitrite Scavengers in Solution and Solid State: A Study of Inhibitory Effect on the Formation of Alkyl-Aryl and Dialkyl N-Nitrosamine Derivatives. Processes. 10(11):2428 (2022).
3. Radhakrishnan et al. A Difficult Pill to Swallow: An Investigation of the Factors Associated with Medication Swallowing Difficulties. Patient Prefer Adherence, vol. 15, pg.29–40, 2021.
4. AAP Division of Health Policy Research. Many patients don't comply with prescription regimens: survey. Vol. 18, pg. 213, 2001.
5. Nordenmalm et al. Children's views on taking medicines and participating in clinical trials. Arch Dis Child., vol. 104, pg. 900–905, 2019.

Scan the QR code and learn how we can help overcome your formulation challenges with our specialty excipients portfolio.

Partner with dsm-firmenich
and bring progress to life.



This publication does not constitute or provide scientific or medical advice, diagnosis, or treatment. This information is based on dsm-firmenich's current knowledge and only contains scientific and technical information for business to business use. dsm-firmenich makes no representation or warranty of the accuracy, reliability, or completeness of the information and as to results to be obtained. Use of this information shall be at your discretion and risk. It does not relieve you of your obligation to comply with all applicable laws and regulations and to observe all third party rights. Nothing herein relieves you from carrying out your own suitability determinations and tests including the stability testing of the finished product. Country or region-specific information should also be considered when labelling or advertising to final consumers. The content of this document is subject to change without further notice. All trademarks listed in this brochure are either registered trademarks or trademarks of dsm-firmenich in Switzerland and/or other countries.

© 2026 dsm-firmenich group. www.dsm-firmenich.com. All rights reserved.