Enhancing drug formulations with specialty excipients

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

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dsm-firmenich

The power of specialty 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 excipients play a multifaceted role. Selecting the right excipients 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 makes 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 biologic products, and provide the necessary regulatory backing for each individual need.

Expert services

Our comprehensive product portfolio is supported by expert services – covering innovation/R&D, application and technical services, insights & marketing, as well as quality and regulatory expertise – to provide full support at every step of the way.

Examples of the use of vitamins as excipients in small molecule formulations (oral and parenteral)

- Antioxidants for API protection – vitamins with antioxidant properties can be incorporated into formulations to protect sensitive drugs from degradation caused by various mechanisms
- Nitrite scavengers to mitigate risk of nitrosamine formation

Nitrosamine risk mitigation

We can support you with nitrosamine risk mitigation strategies with a science-backed approach that is recommended by the US Food and Drug Administration (FDA). 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]

Driving innovation in biologics

We understand parenteral preparations and excipients for the biologics space, supplying high quality, GMP ingredients that maximize product and process performance. As this field continues to grow – including the development of advanced therapy medicinal products – vitamin and vitamin derivatives will play a vital role in key applications.

Examples of applications of vitamins in biologic preparations

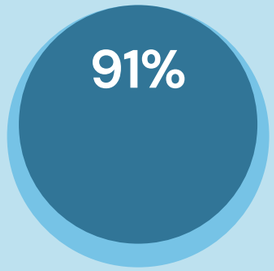
- Preventing protein aggregation
- Reducing viscosity in monoclonal antibody solutions
- Acting as adjuvants in vaccines
- Providing nutrients in cell culture for biopharma processing

Improving patient compliance through taste solutions

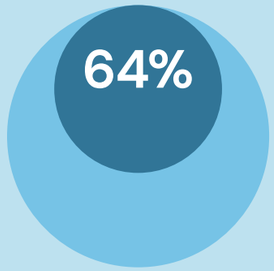
The demand for innovative, patient friendly dosage forms that enhance patient compliance is rising, driven by factors including convenience, pill fatigue and dysphagia.

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 solids and liquids, 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 improve patient convenience and therapy compliance.

50% of people will experience difficulties with swallowing medications at some time in their life[3]



91% of US pediatricians reported unpleasant medication taste as a key barrier to patient compliance[4]



64% of 14-year-olds surveyed said disliking the taste was the main reason they find some medicines difficult to take[5]

Our offering

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

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

Encapsulation technologies that provide longer shelf life, resistance to moisture, oxygen, higher temperatures and a controlled (or optimized) flavor release.

Why dsm-firmenich?

Innovation delivered by experts

Our range of specialty excipients, flavor tonalities and taste modulators are backed by over 80 years of expertise in scientific discovery and innovation. 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, application & technical services, insights & marketing, as well as quality & regulatory expertise – to enhance the performance of drug product formulations, enter the market with confidence and 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

Awarded an EcoVadis Platinum certification, **sustainability** is embedded in our culture. 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. By enforcing responsible, ethical operating practices and through our in-house life cycle assessment expertise, we help our customers to achieve their own sustainability goals.

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.

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