

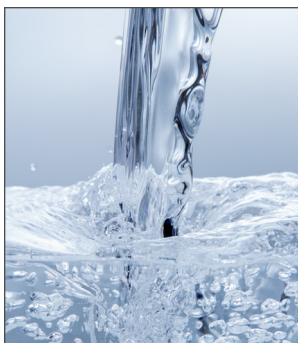
Procipient[®] DMSO (dimethyl sulfoxide USP, Ph.EUR.)

The only grade of DMSO suitable for healthcare and drug delivery applications

Procipient[®]: A versatile pharmaceutical ingredient with high regulatory compliance

Manufactured by Gaylord Chemical, Procipient is both an active pharmaceutical ingredient and a versatile excipient that is widely used in various pharmaceutical and biotechnology applications including:

- Topical and Transdermal Dosage Forms
- Parenteral Drug Delivery & Medical Device Use
- Cryopreservation
- Pharmaceutical Product Processing
- Animal Healthcare formulations
- Enhances Active Pharmaceutical Ingredient (API) solubility



Procipient[®] Characteristics

- Highly purified DMSO with a minimum purity of 99.99%
- Water miscible/extremely polar solvent
- Odorless, clear water-white liquid
- Essentially non-toxic by all routes of administration
- Chemically compatible with other excipients
- Low viscosity (2.0 cP @ 25°C)
- Density similar to water (1.0955 g / mL @ 25°C)
- Low volatility: 189°C boiling point



Extremely Low Toxicity

- DMSO is essentially non-toxic by all routes of administration
- DMSO is well tolerated by oral and dermal route of delivery as well as subcutaneous and intramuscular delivery
- DMSO has a well characterized ADME profile
- Not carcinogenic/mutagenic/teratogenic
- Does not bio-accumulate
- DMSO is oxidized in the body and resulting metabolic products are excreted in the urine



Parenteral Use

In addition to its role as an API, Procipient is also used as an excipient. DMSO has been used to dissolve polymers that precipitate in situ to form biodegradable implants. This may allow the controlled release of active substances. DMSO may also aid in tissue regeneration.

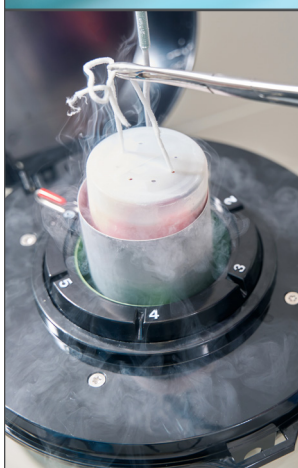
Procipient provides solubility to the API in approved applications. Many innovative applications are currently being evaluated for small volume parenteral products and vaccines.



Topical and Transdermal Dosage Forms

Procipient is a useful excipient in topical and transdermal products for human and animal health. DMSO has been described in new technology to produce anhydrous emulsions for the delivery of hydrolytically unstable drugs, or to provide reservoirs for transdermal delivery systems.

Procipient is a powerful solvent for drugs with low water solubility. The solvent properties of DMSO may allow higher loading of APIs in semisolid products. The low vapor pressure of DMSO enables the formulation to absorb without the skin-chilling effect of excipients such as alcohol. DMSO continues to be evaluated as a penetration enhancer in transdermal formulations.



Cryopreservation

DMSO is well known as a cryopreservation medium. In this role, Procipient enables the long-term cryostorage of cells and biological tissue. It has been used to preserve a variety of cell types, including human bone marrow, ovarian tissue, pancreatic and platelet cells, and hematopoietic stem and progenitor cells.

DMSO transits cell membranes more readily than glycerol.

When combined with water, DMSO exhibits unique and interesting thermodynamic properties. The eutectic mixture remains liquid at minus 80°C, thus preventing cell damage from ice formation while maintaining viability of the cells.

Chemical Name	Manufacturer	Chemical Type	CAS No.	Molecular Formula
Procipient	Gaylord (gChem)	Excipient	67-68-5	C ₂ H ₆ OS

Catalog No.	Size	Unit
18614918	1 LT	Each
18614920	1 LT	CS(6)
18614921	4 LT	Each
18614917	4 LT	CS(4)
18614919	500 LB	Each



Procipient® is the only DMSO product in the world with this level of regulatory support

Gaylord Chemical's Procipient is manufactured under Good Manufacturing Practices (GMP) conditions following ICH Q7 guidelines, conforming to both the USP and Ph.Eur. (EP) monographs.

Procipient is supported by several regulator dossiers, a Type II Drug Master File with US FDA, a CEP granted by EDQM and a Type I Drug Master File with Health Canada.

Procipient is a registered trademark of Gaylord Chemical Company, LLC.

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