

Parenteral Excipient Surfactants for Biologic Formulations

The parenteral application requires excipients of highest quality standards as they directly bypass the body's natural defenses. Our polymeric and surfactant excipients for parenteral applications are produced in Ludwigshafen, Germany by qualified and experienced personnel in line with IPEC-PQG GMP standards, and also subject to microbiological and endotoxin testing prior to release. In addition, our technical experts have access to industry-leading tools and analytics, coupled with a deep and profound understanding of our excipients, which allows us to enable our customers to tackle their formulation challenges rapidly and efficiently.



The quality & regulatory benchmark BASF applies to its excipients for parenterals is comprised of:

- ✓ Manufacturing according to IPEC-PQG GMP
- ✓ Compendial compliance covering current and proposed major global pharmacopoeia standards
- ✓ Endotoxin and microbial testing
- ✓ Elemental impurity limits acc, to ICH Q3D, stability studies acc, to ICH conditions
- ✓ Regulatory documentation, registration and submission support
- ✓ Non-clinical safety data

Product	Functionality	Monograph title / Chemical category	FDA IID listing
Kolliphor® HS-15	Nonionic solubilizer and emulsifier (surfactant; HLB = 15)	Macrogol 15 Hydroxystearate (Ph.Eur.) and Polyoxyl 15 Hydroxystearate (USP/NF) / Polyethoxylated 12-hydroxystearic acid	Yes ¹
Kolliphor® ELP	Nonionic solubilizer and emulsifier (surfactant; HLB = 12-14)	Macrogolglycerol ricinoleate (Ph.Eur.) and Polyoxyl-35-castor oil (USP/NF) / Polyethoxylated castor oil	Yes

¹ Kolliphor® HS 15 is used in a recently FDA approved parenteral drug. For over ten years Kolliphor® HS 15 has been used in injectable drugs in both Canada and Europe.

Figure 1.

The α -amylase Activity Assay shows stabilization of α -amylase in the presence of H_2O_2 after 2 months incubation with Kolliphor[®] HS-15 and Kolliphor[®] ELP, compared to polysorbate 80. α -amylase is an enzyme known to be sensitive to oxidation - after a 60 day incubation, activity assay indicates the parenteral excipients are not contributing to the oxidative degradation

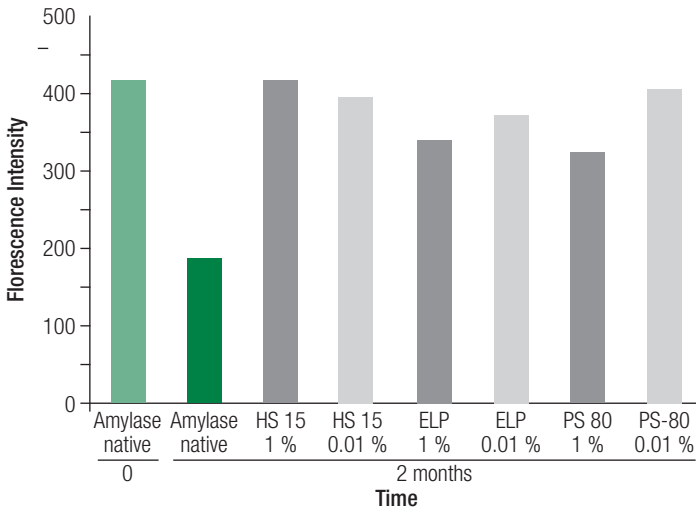
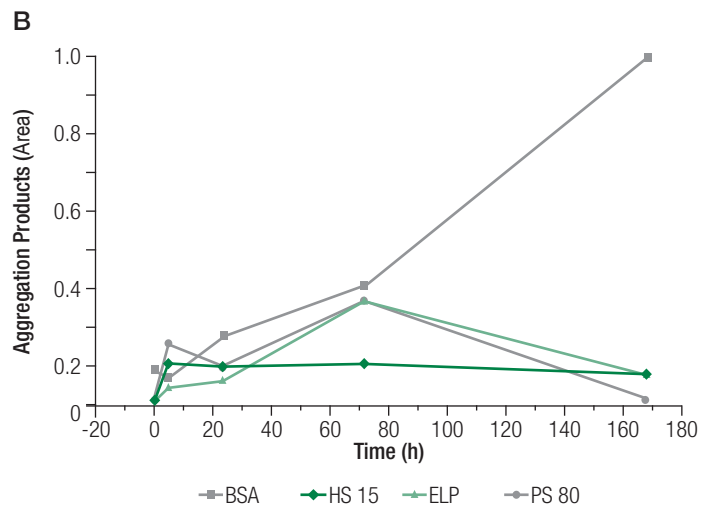
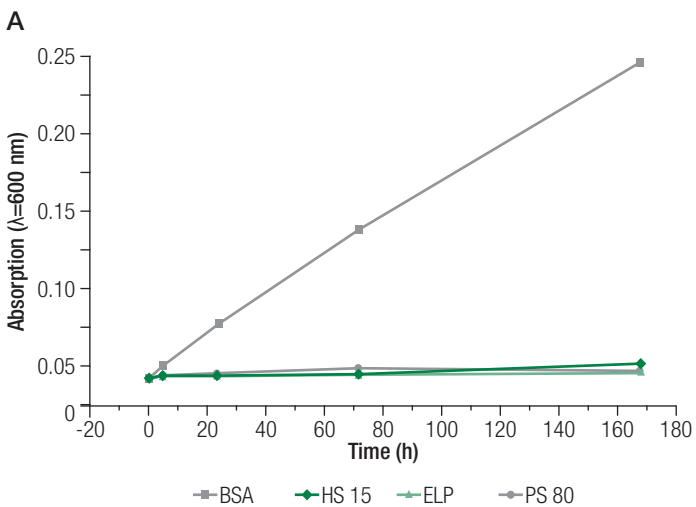


Figure 2a/2b.

Mechanical stress is modeled by stirring BSA for 7 days, with and without surfactants. Absorption measurements show decrease in both (a) formation of visible aggregates, and (b) formation of sub-visible aggregates. Bovine Serum Albumin is a widely characterized, very hydrophobic, and quickly aggregating model protein. By observing visible and sub-visible aggregation a clear stabilization is seen from BASF Parenteral Excipients at or above the CMC value.



Product Spotlight

Kolliphor[®] HS-15

Kolliphor[®] HS-15 is a non-ionic surfactant that appears as a white-yellow paste that melts at 30°C to form a clear liquid. It is freely soluble in water, ethanol and isopropanol. Kolliphor[®] HS-15 is endotoxin-controlled and packaged in steel with polyethylene in-liners. BASF maintains a DMF for Kolliphor[®] HS-15, and the product meets the requirements USP/NF & Ph. Eur. Kolliphor[®] HS-15 has previously been used for parenteral delivery of challenging APIs and is listed in the IID.

Kolliphor[®] ELP

Kolliphor[®] ELP is a non-ionic surfactant that appears as a white-yellowish waxy paste that melts at 26°C to form a clear oily liquid. It is freely soluble in a wide variety of solvents, including water, ethanol and isopropanol. Kolliphor[®] ELP is highly purified, endotoxin-controlled, and packaged in steel containers with polyethylene in-liners. BASF maintains a DMF for Kolliphor[®] ELP, and the product meets USP/NF & Ph. Eur. Kolliphor[®] ELP has previously been used for parenteral delivery of small molecule drugs and is listed in the IID.

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