

SMOF LIPID

Brand Name	SMOF® LIPID 20% (Fresenius Kabi) Neonatal Syringes prepacked by Baxter HealthCare CHCH NZ
Class	Parenteral Nutrition Lipid.
Mechanism of Action	Source of non-carbohydrate calories, fatty acids and essential fat and water-soluble vitamins.
Indications	Component of parenteral nutrition to be infused in combination with glucose/amino acid/electrolyte solutions.
Contraindications^{1,2}	Hypersensitivity to any component of SMOF® lipid including eggs, fish, peanuts and soya beans. Severe hyperlipidaemia, severe liver impairment, severe blood coagulation disorders or severe renal impairment Acute shock General contraindications to infusion therapy; acute pulmonary oedema, hyperhydration, decompensated cardiac failure.
Supplied As	A sterile emulsion of soya bean oil (30%), medium chain triglycerides (30%), olive oil (25%) and fish oil (15%) with added Baxter Paediatric Multivitamins packed in 50mL amber syringes.
Dilution	Not recommended.
Dosage	See Neonatal Handbook Nutrition Guidelines: 1 - 4g /kg /day as per consultant and dietitian advice
Interval	Standard care - continuous IV infusion 24 hours Cholestasis – continuous IV infusion over 12-20 hours as recommended by SMO or Gastroenterologist
Administration	Infuse using amber tubing to ensure light protection. Syringes should be replaced every 48 hours.
Interactions	Nil known
Monitoring	Electrolytes, serum creatinine, liver function tests and full blood count, blood glucose levels and triglycerides
Stability	Unused syringes see manufacturer's expiry. Discard each syringe 48 hours after commencement of infusion.
Storage	In the fridge at 2-8 °C, Protect from light
Adverse Reactions	Temperature instability, GI upset, hypo or hypertension, breathlessness, hypersensitivity reactions, priapism
Metabolism	No data available on pharmacokinetics of SMOF® lipid in neonates.

Compatible With**Solution:** sodium chloride 0.9%, amino acid/glucose**Y-site:** SMOF® lipid has been reported to be:**Compatible with the following medicines at the CWH NICU Dosing concentrations**

Drug	Max Concentration
Amoxicillin ³	100 mg/mL
Benzylpenicillin ^{3,5,8}	100 mg/mL
Calcium gluconate ³	100 mg/mL = 0.22mmol/mL
Dexamethasone ^{10,11}	1mg/mL
Dexmedetomidine ^{4,6,8}	4 mcg/mL
Dobutamine ^{3,8}	7.2 mg/mL
Dopamine ^{2,3,8}	7.2 mg/mL
Furosemide ^{4,6,8}	10 mg/mL
Heparin ^{4,5,6,8}	500 units /mL
Indometacin ³	0.2 mg/mL
Insulin (Actrapid) ^{3,8}	1 units/mL
Levocarnitine ^{2,6}	50 mg /mL
Metronidazole ^{3,5,8}	5 mg/mL
Midazolam ^{4,8}	500 mcg/mL
Milrinone ^{4,6}	200 mcg /mL
Morphine sulphate ^{3,4,5,8}	1 mg / mL
Paracetamol ^{3,5,8}	10 mg/mL
Phenobarbital ³	20 mg/mL
Piperacillin/tazobactam ^{3,8}	200mg/mL
Sildenafil ^{4,6}	0.8mg /mL
Sodium Bicarbonate ³	4.2%
Vancomycin ^{3,5,8}	10 mg/mL

Y-site: SMOF® lipid has been reported to be:**Compatible with the following medicines but outside CWH NICU Dosing concentrations so alterations would need to be made**

Drug	Max Conc	Comments
Adrenaline ^{2,8}	4 mcg/mL	We use 0.9 – 60 mcg/ mL
Cefotaxime ^{3,8}	100 mg/mL*	We use 250 mg/mL
Cefuroxime ²	30mg/mL	We use 100 mg/mL
Noradrenaline ²	8 mcg/mL	We use 10-100mcg/mL. Guideline only, not a paper
Octreotide ²	2 mcg /mL	We use 10 – 25 mcg/mL

Incompatible, Inconclusive, or Lack of Evidence**Y-site: Inconclusive or Conflicting Reports on Compatibility with SMOF® Lipid**

Aciclovir	Variable reports ⁸ , Some suggest compatibility up to a concentration of 5mg/mL. Not compatible with Intralipid
Ceftazidime ^{8,12}	1 incompatible report ¹² Guideline only
Ciprofloxacin ^{2,5}	1 incompatible report ⁸ Maximum concentration uncertain. No research references
Erythromycin ²	Only 1 guideline found, maximum concentration uncertain. No research references
Fluconazole ^{2,5,8}	1 hospital guideline ⁵ suggests compatibility but others ^{2,8} do not and research evidence is unavailable
Meropenem	Some overseas hospital guidelines ^{2,5,8} appear to support y-site compatibility of meropenem with SMOF® lipid but research evidence is conflicting ⁷ .

Y-site: SMOF® lipid has been reported to be:

Incompatible with the following medicines - must use a separate line

Albumin ^{11, 12, 13}
Alprostadil
Amikacin
Amiodarone
Amphotericin B
Caffeine Citrate
Flucloxacillin ¹⁴
Famotidine
Gentamicin
Hydrocortisone
Immunoglobulin
Rocuronium
Tobramycin

Y-site: No evidence available – must use a separate line

Adenosine
Doxapram
Levetiracetam
Omeprazole
Pancuronium
Phenytoin
Zidovudine

Comments	SMOF [®] lipid compatibility data is limited. Direct comparison with Intralipid [®] compatibility is not possible because SMOF [®] lipid is a composite solution while Intralipid only contains soya bean oil.
References	<ol style="list-style-type: none"> 1. SMOF[®] Lipid Data Sheet www.medsafe.govt.nz 2. SMOF[®] Lipid & Drug Compatibility Guidelines Y-site IWK Health Centre Halifax Canada Feb 2022 3. Senarathna SMDKG, et al. Physical compatibility of lipid emulsions and intravenous medications used in neonatal intensive care settings Eur J Hosp Pharm 2023;0:1–5. doi:10.1136/ejhpharm-2023-003870 4. RHW SMOFlipid Formulation Guideline (Royal Hobart Hospital 2023) 5. Anon: Paediatric Newborn Medicine Clinical Practice Guidelines 2020 https://www.brighamandwomens.org/assets/BWH/pediatric-newborn-medicine/pdfs/iv-fatemulsion-cpg.pdfAntibiotics (Basel). 6. Ross EL et al. Compatibility of medications with intravenous lipid emulsions: Effects of simulated Y-site mixing. https://academic.oup.com/ajhp/advance-article/doi/10.1093/ajhp/zxaa299/591561 7. Gostynska A et al. Toward Safe Pharmacotherapy: The interplay between Meropenem and parenteral Nutrition admixtures 2021 Feb; 10(2):217 doi: 10.3390/antibiotics10020217PMCID: PMC7926682 8. Anon CHEO Ottawa Hospital Neonatal Drug Therapy Manual (last updated April 2021) https://outreach.cheo.on.ca/manual/2272-0 9. Bouchourd L et al. Compatibility of Intravenous Medications with Parenteral Nutrition: In Vitro Evaluation. Journal of Parenteral and Enteral Nutrition 2013; 37(3) 416-412. DOI: 10:1177/014860711246219 jpen.sagepub.com 10. Tomczak S et al. Antiemetic Drugs Compatibility Evaluation with Paediatric Parenteral Nutrition admixtures. Pharmaceutics 2023 15(8): 2143- 2157 DOI 10.3390/pharmaceutics15082143 11. Anon Childrens Hospital of Eastern Ontario Drug Monographs CHEO ED Outreach 12. Anon Albumin Clinical Practice Guideline AlbuminMay14.pdf (nsw.gov.au) 13. www.medsafe.govt.nz 14. www.anmf.org
Updated By	A Lynn, B Robertshawe December 2023