

# Sucrose

## Newborn Use Only

2017

<b>Alert</b>	Sucrose for this purpose is a medication and needs to be prescribed and documented on the medication chart.
<b>Indication</b>	Analgesia –relief of pain for infants undergoing minor procedures.
<b>Action</b>	Orally mediated increase in endogenous opioids.
<b>Trade Name</b>	Sucrose Oral Solution 24% (Phebra) SweetUms 24% Sucrose (Atris)
<b>Presentation</b>	24% sucrose oral solution 1 mL.
<b>Dosage / Interval</b>	0.012–0.12 g (0.05–0.5 mL of 24% Sucrose)  There are no published dose limits per day. There is a lack of long-term safety data in infants. Avoid excess usage in extreme to very preterm infants < 31 weeks post-conceptual age (suggested maximum 1 mL cumulative dose per 24 hours).
<b>Route</b>	Oral
<b>Administration</b>	Administer onto buccal mucosa – under tongue or anterior tongue toward cheek. Do not administer directly into the stomach via an intra-gastric tube. Two minutes prior to the painful procedure, administer a small volume of sucrose onto the anterior aspect of the infant’s tongue. Offer a pacifier if this is part of the infant’s care. Encourage non-nutritive sucking, as it may increase the pain relief effect. On commencement of the painful procedure, give another small volume to the infant. Continue to administer small volumes every 2 minutes or more frequently as required.
<b>Monitoring</b>	Monitor for signs of gagging and choking. Monitor for effectiveness — reduction in behavioural and physiological signs of pain.
<b>Contraindications</b>	Infants with known intolerance to sucrose or fructose.
<b>Precautions</b>	Use with caution in preterm neonates, intubated infants, infants who are muscle relaxed, infants with confirmed or suspected necrotising enterocolitis, infants with altered or impaired gag and swallow reflexes and infants who are nil by mouth. Major procedures (e.g. insertion of a chest drain) requiring increased pain relief — consider other pain relief measures. Infants requiring investigations for hypoglycaemia and inborn errors of metabolism.
<b>Drug Interactions</b>	Nil
<b>Adverse Reactions</b>	Sucrose is generally well tolerated. Administration may be associated with minor oxygen desaturation, choking, bradycardia and brief apnoeas. <sup>1</sup>
<b>Stability</b>	Single use only.
<b>Storage</b>	Store below 25°C.
<b>Special Comments</b>	Breast milk is the first choice and sucrose is used when breast milk is not available. Oral sucrose should be used in addition to other supportive non-pharmacological measures.
<b>Evidence Summary</b>	<b>Efficacy</b> Sucrose is effective for reducing procedural pain from single events such as heel lance, venepuncture and intramuscular injection in both preterm and term infants. Sucrose is not effective in reducing pain from circumcision. The effectiveness of sucrose for reducing pain/stress from other interventions such as arterial puncture, subcutaneous injection, insertion of nasogastric or orogastric tubes, bladder catheterisation, eye examinations and echocardiography examinations are inconclusive. For eye examinations, there is limited evidence that sucrose may confer some pain relief when combined with other pain reducing interventions. <sup>1</sup> (LOE I, GOR A). Combined intervention of sucrose and non-nutritive sucking are more effective in providing analgesia than single intervention in term neonates undergoing heel lance. <sup>2</sup> (LOE II/GOR B). There were very few studies conducted in extremely preterm infants < 27 weeks gestation. Sucrose is possibly effective in reducing pain from immunisations from 1 to 12 months. (LOE I GOR B) Administration of glucose/sucrose had similar effectiveness as breastfeeding for reducing pain. <sup>6</sup> (LOE I GOR B)

	<p>Precise sucrose dosing and age parameters are not well defined. There are no published dose limits per day.<sup>4</sup></p> <p><b>Safety</b>                  Sucrose is generally well tolerated with reported adverse effects minor and similar in the sucrose and control groups.<sup>1,3</sup> (LOE I, GOR A). Additional research is needed to determine the effect of repeated sucrose administration on pain intensity. There are no long-term studies on neurodevelopmental outcomes. However, Johnston et al observed neurobehavioural changes at term corrected age in infants &lt; 31 weeks post-conceptual age receiving a cumulative dose &gt; 1 mL in 24 hours (LOE II, GOR C).<sup>7,8</sup></p> <p><b>Pharmacodynamics</b>                  The greatest analgesic effect occurs when sucrose is administered approximately two minutes before the painful stimulus. The peak effect appears to occur at two minutes and lasts approximately four minutes.<sup>1</sup></p>
<b>References</b>	<ol style="list-style-type: none"> <li>1. Stevens B, Yamada J, Ohlsson A, Haliburton S, Shorkey A. Sucrose for analgesia in newborn infants undergoing painful procedures. Cochrane Database of Systematic Reviews 2016, Issue 7. Art. No.: CD001069. DOI: 10.1002/14651858.CD001069.pub5.</li> <li>2. Thakkar P, Arora K, Goyal K, Das RR, Javadekar B, Aiyer S, Panigrahi SK. To evaluate and compare the efficacy of combined sucrose and non-nutritive sucking for analgesia in newborns undergoing minor painful procedure: a randomized controlled trial. J Perinatol. 2016 Jan;36(1):67-70</li> <li>3. Banga S, Datta V, Rehan HS, Bhakhri BK. Effect of Sucrose Analgesia for Repeated Painful Procedures, on Short-term Neurobehavioral Outcome of Preterm Neonates: A Randomized Controlled Trial. J Trop Pediatr. 2015 Nov 27. pii: fmv079. [Epub ahead of print]</li> <li>4. Lefrak L, Burch K, Caravantes R, Knoerlein K, DeNolf N, Duncan J, Hampton F, Johnston C, Lockey D, Martin-Walters C, McLendon D. Sucrose analgesia: identifying potentially better practices. Pediatrics 2006;118(Supplement 2):S197-202.</li> <li>5. Kassab M, Foster JP, Foureur M, Fowler C. Sweet-tasting solutions for needle-related procedural pain in infants one month to one year of age. Cochrane Database Syst Rev. 2012;12:CD008411</li> <li>6. Shah PS, Herbozo C, Aliwalas LL, Shah VS. Breastfeeding or breast milk for procedural pain in neonates. Cochrane Database Syst Rev. 2012;12:CD004950.</li> <li>7. Johnston CC, Filion F, Snider L, Limperopoulos C, Majnemer A, Pelausa E, Cake H, Stone S, Sherrard A, Boyer K. How much sucrose is too much sucrose? Pediatrics. 2007;119:226.</li> <li>8. Johnston CC, Filion F, Snider L, Majnemer A, Limperopoulos C, Walker CD, Veilleux A, Pelausa E, Cake H, Stone S, Sherrard A, Boyer K. Routine sucrose analgesia during the first week of life in neonates younger than 31 weeks' postconceptional age. Pediatrics. 2002;110:523-8.</li> </ol>

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