

Thickening Booklet

Pages 2-4 are about thickening techniques

Pages 5-10 have ingredient labels of thickening products and cereals

Pages 11-16 have information about nipples for thickened liquids

Authors:

Sorley Bouton, PAGER Intern

Beth Pulsifer-Anderson, PAGER Director

Copyright PAGER Association 2010

Thickening formula is done for several reasons:

- You want a food that doesn't splash every time the baby moves or the stomach churns. Thickened liquids don't splash out of the stomach as easily.
- The stomach treats liquids and solids differently. Thickened liquids provoke a different kind of churning action.
- Children who have trouble gaining weight may benefit from extra calories in their food.
- Children prone to choking sometimes do better on thicker liquids. The thicker liquids seem to be less prone to going "down the wrong tube."

There is a chemical sensor at the top of the stomach that senses air bubbles and lets them out. If it senses food or acid, it is supposed to keep the top of the stomach shut. Thickened liquids may help the chemical receptor recognize the presence of a liquid and close the sphincter at the top of the stomach correctly.

Thickening doesn't work for all children all the time:

- Watch your child carefully! There are a few children who choke more on thickened liquids! Watch how the thickening affects swallowing of "second hand" food that has been refluxed out of the stomach once. The baby may re-swallow it.
- Some children gain too much weight when the milk is thickened with cereal. Non-calorie thickeners are available at pharmacies.
- Thickening does not reduce acid.
- Thickening doesn't decrease reflux in all children, it just keeps the stomach contents from coming up far enough to be seen.
- Pumping and using a bottle can disrupt breastfeeding. Please consult a breastfeeding expert to help avoid problems.
- Some children with reflux sleep better with an empty stomach. Parents discover this after accidentally missing the last evening bottle. It may be worth trying.

Ideal Thickness:

If the formula is too thin, you aren't accomplishing anything except increasing the number of calories per ounce—it will still splash. If the formula is too thick, the baby won't be able to get it out of the bottle and will get tired before she gets full.

Pediatricians use these descriptions for the perfect thickness: "stage 1 baby foods" or "tomato sauce." (Not tomato paste!) Commercial thickening companies use the terms "nectar," "honey" and "pudding." We tested real fruit nectars and found them to be too thin. Honey was far too thick. Tomato sauce and stage 1 foods are just about right. When we tested commercial thickeners, we usually used a bit more thickener than their "nectar" recipe.

Note: Breast milk will thicken up fine, but a few minutes later it gets thin again. There is an enzyme in the breast milk (Amylase) that "digests" cereals and it will get thin after about 5 minutes. If your child chokes on thin liquids, thickening breast milk may help. But if you want the milk to stay thick, try using commercial thickener made of Xanthan gum.

Pediatricians usually recommend that you add 1 Tablespoon of cereal per every ounce of water; however, some cereals thicken much more than others.

To find a solution, PAGER Association has conducted a series of experiments to find the appropriate thickness for a few different brands of baby cereals. The purpose of putting together this booklet is to demonstrate potential ways of thickening up your baby's cereal.

Each experiment was started using 1 Tablespoon of cereal per ounce of water, with more cereal/thickener added to mixture as needed to create the ideal thickness. Our measuring device was more accurate with large bottles, so we mixed 8 ounce bottles with each brand.

We used powdered formula in pre-measured packets for our experiments. Use liquid formula if a pediatrician instructs you to do so. Powders are not sterile and should not be given to babies that were born prematurely or babies with immunity issues. Powders contain cornstarch to prevent caking, and some babies may have a reaction to this ingredient.

Which one is the Tablespoon? The one on the left!
Three **t**easpoons fit into a **T**ablespoon



Thickened formula will not come out of a regular nipple. Most bottle manufacturers have cross cut nipples and variable flow nipples. Ask your pharmacist or grocery manager to order them. (See the section on choosing nipples, beginning on page 13??)



Formula Mixer

The Munchkin Formula Mixer made it very easy for us to mix the formula's that we used. It is cheap, simple and effective, and mixes the cereal completely at the push of a button. We started off with a whisk, but switched to this mixer.

Zoom for Detail

Brand	Amount needed to thicken a 4 ounce bottle	# of calories in the thickener for the 4 ounce bottle. (Add this to the calories from the milk.)	Amount needed to thicken an 8 ounce bottle	# of calories in the thickener for the 8 ounce bottle. (Add this to the calories from the milk.)
Gerber DHA & Probiotic Rice	3.5 Tablespoons	52	7 Tablespoons	105
Gerber Rice	5 Tablespoons	75	10 Tablespoons	150
Gerber Oatmeal	5 Tablespoons	75	10 Tablespoons	150
Beechnut Rice	4 Tablespoons	60	8 Tablespoons	120
Beechnut Oatmeal	4 Tablespoons	60	8 Tablespoons	120
Earth's Best Whole Grain Oatmeal	3 Tablespoons & 1/2 teaspoon	42	6 Tablespoons & 1 teaspoon	85
Earth's Best Whole Grain Rice	2 Tablespoons & 1/2 teaspoon	31	4 Tablespoons & 1 teaspoon	63
Happy Bellies Organic Multi-grain	4 Tablespoons & 1 teaspoon	80	9 Tablespoons & 2 teaspoons	190
Happy Bellies Organic Brown Rice	3.5 Tablespoons	70	7 Tablespoons	140
Happy Bellies Organic Oatmeal	4 Tablespoons & 2 teaspoons	92	9 Tablespoons & 1 teaspoon	185
Thick-It	2 Tablespoons & 1/2 teaspoon	32	4 Tablespoons & 1 teaspoon	65
Thick & Easy	1.5 Tablespoons	22	3 Tablespoons	45
NutraThik (powder) [Also available in packets called Thik and Clear]	1 Tablespoon	20	2 Tablespoons	40
Hydra-Aid (gel) Nectar	1&1/8 packets	0	2 1/4 packets	0
Simply Thick (gel) Nectar	2 packets	0	4 packets	0
Simply Thick (gel) Honey	1&1/8 packets	0	2 1/4 packets	0
Missing brand??				
Missing brand??				

Gerber DHA & Probiotic Rice

Zoom for Detail



Gerber Rice

Zoom for Detail



Gerber Oatmeal

Zoom for Detail



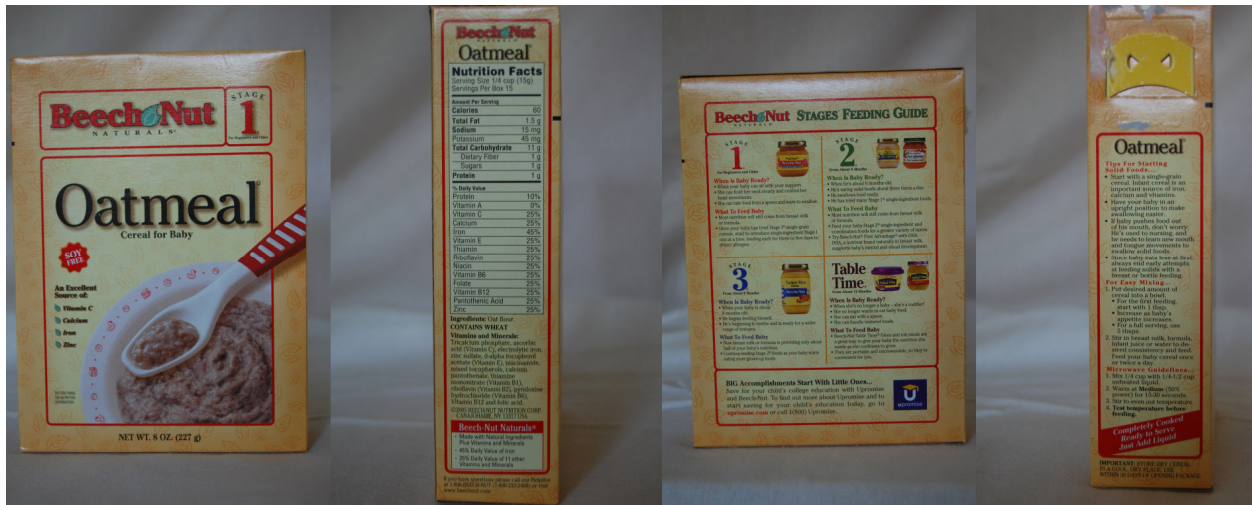
Beechnut Rice

Zoom for Detail



Beechnut Oatmeal

Zoom for Detail



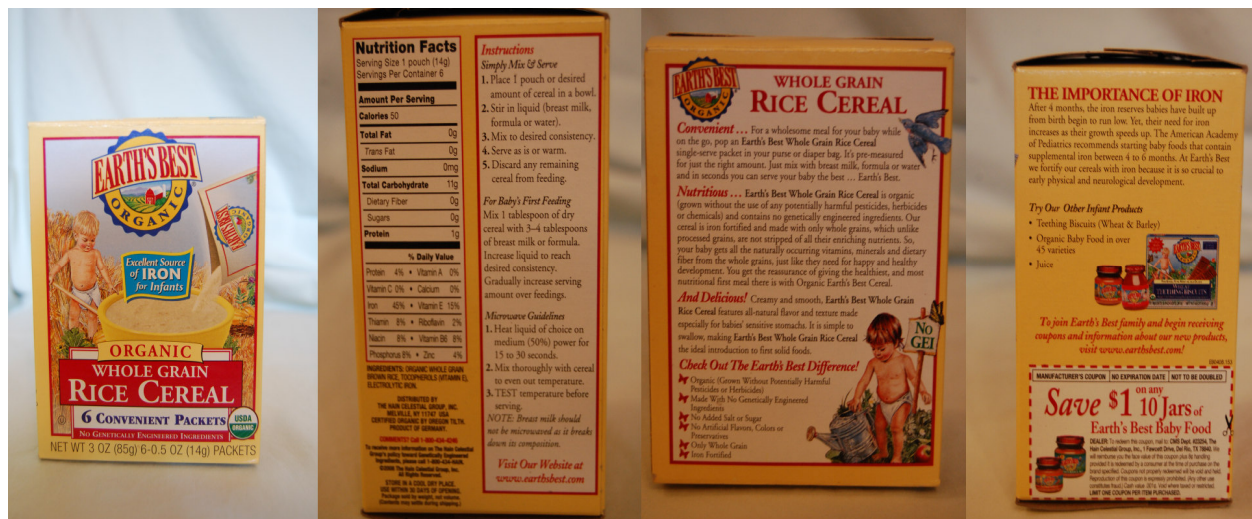
Earth's Best Whole Grain Oatmeal

Zoom for Detail



Earth's Best Whole Grain Rice

Zoom for Detail



Happy Bellies Organic Multi-grain

Zoom for Detail



Happy Bellies Organic Brown Rice

Zoom for Detail



Happy Bellies Organic Oatmeal

Zoom for Detail



Thick-It

Zoom for Detail



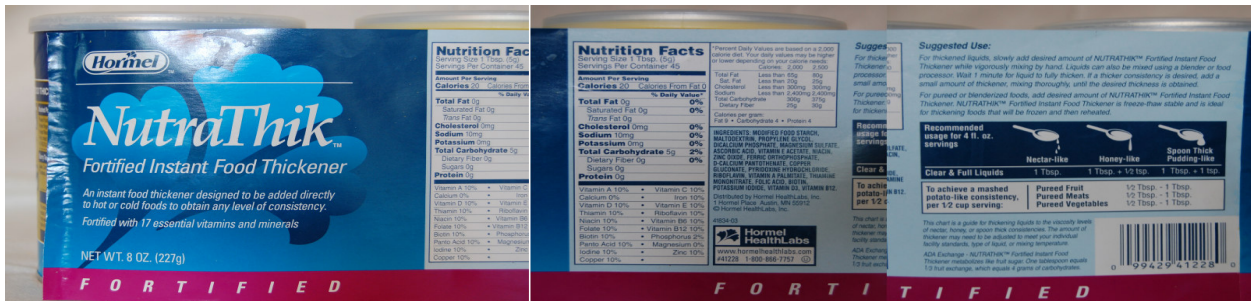
Thick&Easy

Zoom for Detail



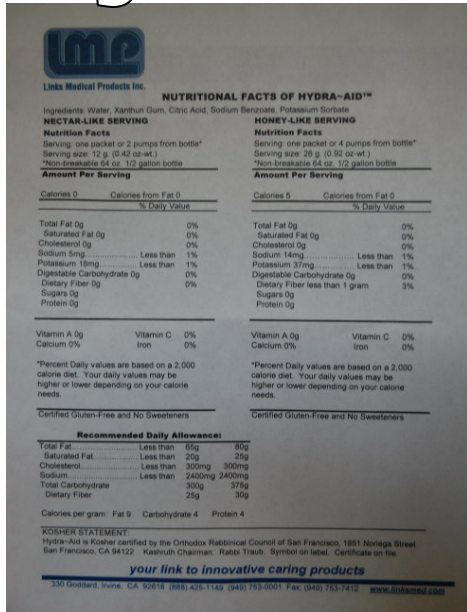
NutraThik

Zoom for Detail



Hydra-Aid

Zoom for Detail



LINKS MEDICAL PRODUCTS INC.

NUTRITIONAL FACTS OF HYDRA-AID™

NECTAR-LIKE SERVING

Ingredients: Water, Xanthan Gum, Citric Acid, Sodium Benzoate, Potassium Sorbate

Nutrition Facts

Serving: one packet or 2 pumps from bottle*

Serving size: 12 g (0.42 oz. wt.)

*Non-breakable 64 oz. 1/2 gallon bottle

Amount Per Serving		Calories 0	
		Calories from Fat 0	% Daily Value
Total Fat 0g	0%		
Saturated Fat 0g	0%		
Cholesterol 0g	0%		
Sodium 1mg	Less than 1%		
Potassium 17mg	Less than 1%		
Digestible Carbohydrate 0g	0%		
Dietary Fiber 0g	0%		
Sugars 0g	0%		
Protein 0g	0%		
Vitamin A 0g	0%	Vitamin C 0%	0%
Calcium 0%	0%	Iron 0%	0%

*Percent Daily values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Certified Gluten-Free and No Sweeteners

Recommended Daily Allowance:

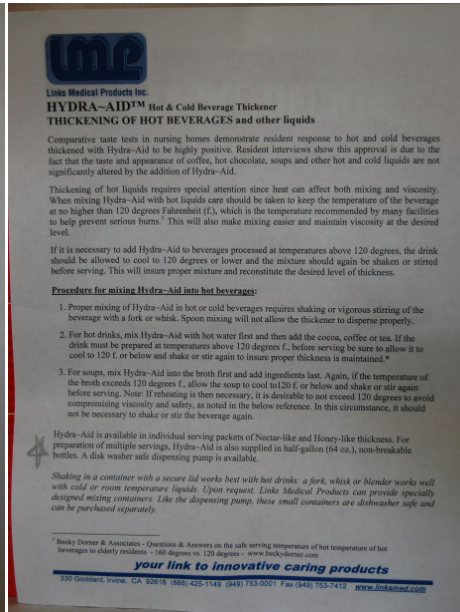
Total Fat	Less than 65g	80g
Saturated Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2400mg	2400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g

Calories per gram: Fat 9 Carbohydrate 4 Protein 4

KOSHER STATEMENT
Hydra-Aid is Kosher certified by the Orthodox Rabbinical Council of San Francisco, 1881 Noriega Street, San Francisco, CA 94122. Kashruth Chairman: Rabbi Traudl. Symbol on label. Certificate on file.

your link to innovative caring products

330 Goodwin, Irvine, CA 92618 (888) 425-1149 (949) 753-0001 Fax: (949) 753-7412 www.linksmed.com



LINKS MEDICAL PRODUCTS INC.

HYDRA-AID™ Hot & Cold Beverage Thickener

THICKENING OF HOT BEVERAGES and other liquids

Comparative taste tests in nursing homes demonstrate resident response to hot and cold beverages thickened with Hydra-Aid to be highly positive. Resident interviews show this approval is due to the fact that the taste and appearance of coffee, hot chocolate, soups and other hot and cold liquids are not significantly altered by the addition of Hydra-Aid.

Thickening of hot liquids requires special attention since heat can affect both mixing and viscosity. When mixing Hydra-Aid with hot liquids care should be taken to keep the temperature of the beverage at no higher than 120 degrees Fahrenheit (F), which is the temperature recommended by many facilities to help prevent serious burns. This will also make mixing easier and maintain viscosity at the desired level.

If it is necessary to add Hydra-Aid to beverages processed at temperatures above 120 degrees, the drink should be allowed to cool to 120 degrees or lower and the mixture should again be shaken or stirred before serving. This will insure proper mixture and reconstitute the desired level of thickness.

Procedure for mixing Hydra-Aid into hot beverages:

- Proper mixing of Hydra-Aid in hot or cold beverages requires shaking or vigorous stirring of the beverage with a fork or whisk. Spoon mixing will not allow the thickener to disperse properly.
- For hot drinks, mix Hydra-Aid with hot water first and then add the cocoa, coffee or tea. If the drink must be prepared at temperatures above 120 degrees F, before serving be sure to allow it to cool to 120 F, or below and shake or stir again to insure proper thickness is maintained.*
- For soups, mix Hydra-Aid into the broth first and add ingredients last. Again, if the temperature of the broth exceeds 120 degrees F, allow the soup to cool to 120 F, or below and shake or stir again before serving. Note: If reheating is then necessary, it is desirable to not exceed 120 degrees to avoid compromising viscosity and safety, as noted in the below reference. In this circumstance, it should not be necessary to shake or stir the beverage again.

Hydra-Aid is available in individual serving packets of Nectar-like and Honey-like thickness. For preparation of multiple servings, Hydra-Aid is also supplied in half-gallon (64 oz.), non-breakable bottles. A disk washer safe dispensing pump is available.

*Shaking in a container with a secure lid works best with hot drinks; a fork, whisk or blender works well with cold or room temperature liquids. Upon request, Links Medical Products can provide specially designed mixing containers. Like the dispensing pump, these small containers are dishwasher safe and can be purchased separately.

your link to innovative caring products

330 Goodwin, Irvine, CA 92618 (888) 425-1149 (949) 753-0001 Fax: (949) 753-7412 www.linksmed.com

SimplyThick

Zoom for Detail



nectar The Thickening Gel You Can't Taste™

Instant Food Thickener

simplythick

CONTAINS 10/15 G (0.5 OZ.) AND 1/120 G (4.2 OZ.) PACKETS
NET WT. 270 G (9.5 OZ.)

LARGE PACKET DIRECTIONS FOR USE: Add contents of 120 g packet to 32 oz. (946 ml) of liquid to be thickened. Mix vigorously (i.e., shake in a closed container, beat with a whisk, or use blender for a few seconds). Makes 36.2 oz. (1080 ml).

SMALL PACKET DIRECTIONS FOR USE: Add contents of 15 g packet to 4 oz. (120 ml) of liquid to be thickened. Mix vigorously (i.e., shake in a closed container, beat with a whisk, or use blender for a few seconds). Makes 4.5 oz. (135 ml).

INGREDIENTS: Water, Xanthan Gum, Citric Acid, Sodium Benzoate, Potassium Sorbate.

Manufactured exclusively for SimplyThick, LLC, St. Louis, MO.
800.205.7115. www.simplythick.com

© and ©2005 SimplyThick, LLC, St. Louis, MO. All rights reserved. Patents pending.

For the 10/15g packets:

Nutrition Facts	
Serving Size: 1 packet (15 grams)	
Servings Per Container: 10	
Amount Per Serving	
Calories 0	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Trans Fat 0g	
Sodium 0mg	0%
Total Carbohydrate 0g	0%
Dietary Fiber 0g	0%
Protein 0g	
Not a significant source of other nutrients.	
* Percent Daily Values are based on a 2,000 calorie diet.	
Ingredients: Water, xanthan gum, citric acid, potassium sorbate, sodium benzoate.	
Manufactured exclusively for: SimplyThick, LLC, St. Louis, MO 63105, 800.205.7115, www.simplythick.com	



honey The Thickening Gel You Can't Taste™

Instant Food Thickener

simplythick

CONTAINS 7/30 G (1.1 OZ.) AND 1/240 G (8.5 OZ.) PACKETS
NET WT. 450 G (15.9 OZ.)

LARGE PACKET DIRECTIONS FOR USE: Add contents of 240 g packet to 32 oz. (946 ml) of liquid to be thickened. Mix vigorously (i.e., shake in a closed container, beat with a whisk, or use blender for a few seconds). Makes 40.5 oz. (1200 ml).

SMALL PACKET DIRECTIONS FOR USE: Add contents of 30 g packet to 4 oz. (120 ml) of liquid to be thickened. Mix vigorously (i.e., shake in a closed container, beat with a whisk, or use blender for a few seconds). Makes 5.1 oz. (150 ml).

INGREDIENTS: Water, Xanthan Gum, Citric Acid, Sodium Benzoate, Potassium Sorbate.

Manufactured exclusively for SimplyThick, LLC, St. Louis, MO.
800.205.7115. www.simplythick.com

© and ©2005 SimplyThick, LLC, St. Louis, MO. All rights reserved. Patents pending.

For the 7/30g packets:

Nutrition Facts	
Serving Size: 1 packet (30 grams)	
Servings Per Container: 7	
Amount Per Serving	
Calories 0	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Trans Fat 0g	
Sodium 10mg	0%
Total Carbohydrate Less than 1g	0%
Dietary Fiber Less than 1g	4%
Protein 0g	
Not a significant source of other nutrients.	
* Percent Daily Values are based on a 2,000 calorie diet.	
Ingredients: Water, xanthan gum, citric acid, potassium sorbate, sodium benzoate.	
Manufactured exclusively for: SimplyThick, LLC, St. Louis, MO 63105, 800.205.7115, www.simplythick.com	

Bottles & Nipples



These are all the brands of bottles that we used when conducting our experiment for the nipple with the best flow.

The nipples were rated on a point scale of 0 to 5, with 0 being too slow and 5 being quite fast.

Zoom for Detail

Thickened formula required a larger nipple. We tested various baby bottles and nipples to determine which brand would allow the best flow. Before running our tests, we visited 4 stores and purchased every “cereal,” “thick liquid,” “x-cut” nipple and “y-cut” nipple possible. It made sense to buy 1 of every bottle system that was available. We also purchased a large packet of cheap Gerber nipples to take a more hands on approach and practice cutting our own holes to increase the opening.

After debating for some time the best way to go about testing this experiment (since we had no babies to volunteer), we decided to take more of a “do-it-yourself” approach! The 2 testers, Beth and Sorley, used a pitcher of thickened cereal and began sampling the various bottles spread out across the kitchen table. Of course, we weren’t going to swallow the mixture, so after sucking the displeasing concoction through the nipple, we had spit buckets at the ready. The two of us took turns trying out every bottle (we each had our own, and each was sterilized) and rated them from most effective to least effective based on our own opinions. We each wrote down our own ratings before comparing them with one another.

Stomach acid kills bacteria. If your baby is on acid reducing medicines, you will need to be extra careful about avoiding bacteria. Ask your pediatrician how long to keep boiling bottles, nipples, pacifiers, spoons, medicine droppers and teething rings. Also, high-chair surfaces should be kept clean.

These three bottles (Gerber Nuk, Dr. Brown's, and Avent) seemed to have the best flows out of all the bottles that were used, with Gerber Nuk being the best (5), Dr. Brown's coming in second (4), and Avent coming in third place (3). The nipples were naturally wider than other brands we experimented with and proved to be easier to suck the thickened liquid through, therefore making it easier for a baby to receive their meal with minimal effort. It is possible that the flow can be too fast for some babies and they could gag.



Gerber Nuk

Ranked at 5. Gerber's orthodontic nipples, made of silicon. Has 1 large hole placed towards roof of mouth and works great! It might be too fast for some children. The nipple is very soft and collapsible which also may not work for some children.



Dr. Brown's

Ranked at 4. Has a Y-cut nipple that works well.



Avent

Ranked at 3. Did not flow as well as Gerber Nuk or Dr. Brown's, but still does the job.

Zoom for Detail



Born Free

Ranked at 2. You would probably have to enlarge the hole.



ThinkBaby

Ranked at 1.5. You would probably have to enlarge the hole.



Nuby Non-drip

Ranked at 1.5. These nipples are difficult or impossible to cut yourself



Playtex

Ranked at 1. You would need to enlarge the hole.

Zoom for Detail



Gerber (latex nipple)

Ranked at 0. You would have to enlarge the hole. Easy to cut.



Gerber (silicon nipple)

Ranked at 0. Easy to cut.

Other feeding gadgets that might be useful for reflux

The Flowspoon is useful for feeding cereal separately instead of mixing it into the bottle. Baby slurps the cereal from the bottom opening. This is a more natural mouth movement for infants.



The Boon Squirt and similar “spoons” hold cereal in the handle.



Zoom for Detail

The Podee Bottle is great for feeding your child in an upright position; however, it does not allow sufficient flow for thickened meals.





It is possible to cut your own holes into the top of a nipple if you want to increase the flow.

It works much better with silicon nipples rather than other materials.

The easiest way to cut your own is with an exact-o knife or manicure scissors. Get a wooden spoon (we used a mallet) with a rounded end and push it up into the nipple. Then, using the wood as a base, carefully push the blade through the top of the nipple and make an X-shaped cut.

It is relatively easy to do this yourself, and it does not require much precision by the cutter. Just gently use the blade (without cutting yourself please!) to cut a larger X or Y cut into the center of the nipple. You do not need to enlarge it a great deal, just use tiny strokes.

The above picture (nipples on chopsticks) shows how we increased the size of the hole based on how far down the chopstick the nipple is resting.



Zoom for Detail



The mallet displayed on the right would be the correct type to use because it is rounded off at the end. The other mallet has a flat bottom, which makes it harder to cut an X into the nipple.

Zoom for Detail



This shows how we increased the size of one of the nipple openings. They started off the same, but after a few incisions, the adjusted nipple flowed noticeably better than it did as purchased.