Selection and Use of Galactogogues

Article *in* ICAN Infant Child & Adolescent Nutrition · March 2015
DOI: 10.1177/1941406415579718

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Selection and Use of Galactogogues

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Abstract: *Breastfeeding mothers are often are concerned about an inadequate quantity of breast milk, designated as insufficient milk supply. Many breastfeeding mothers will attempt to increase the quantity of breast milk production by taking prescription drugs and/or herbs and foods called galactogogues. Galactogogues are defined simply as substances that promote lactation. The most common prescription galactogogues are domperidone, metoclopramide, metformin, and oxytocin. Many common herbals and foods have been traditionally used as galactogogues. These galactogogues will be reviewed; this information will allow health care professionals in all settings to provide consultative services to breastfeeding mothers. Breastfeeding mothers and supporters will find the information useful to determine if galactogogues are necessary, and if so, which galactogogues are appropriate for use. Treatment guidelines including benefits, doses, actions, and cautions are discussed.*

Keywords: galactogogues; domperidone; metoclopramide; metformin; herbals; breastfeeding; lactation

Galactogogues may be considered for insufficient milk supply when nonpharmacologic interventions do not aid in increasing milk supply. Galactogogues typically increase prolactin levels and thus initiate the breast milk letdown reflex but also sometimes aid in breast milk ejection. Multiple mechanisms may come into play. Synthetic galactogogues include dopamine antagonists such as domperidone and metoclopramide; antipsychotics such as chlorpromazine, reserpine, sulpiride, trifluoperazine, and thioridazine; hormones such as oxytocin, growth hormone, and recombinant human prolactin; and miscellaneous agents such as metformin.[1-3] Domperidone, metoclopramide, metformin, and oxytocin are the most commonly used synthetic galactogogues due to their relative efficacy and safety in breastfeeding women. Many herbals and foods are commonly used for their galactogogue properties. The list is quite extensive and includes alfalfa, almonds, anise, asparagus, barley, basil, beets, borage, caraway, carrots, chaste tree fruit, cherries, chicken broth/soup/stock, chickpeas (garbanzo beans), coconut, coriander seeds, cumin, dandelion, dill, fennel, fenugreek, flax seeds, garlic, ginger, goat's rue, green beans, hibiscus, hops, lemon balm, lentils, lettuce, malunggay (moringa), marshmallow root, millet, molasses (black strap), mung, mushrooms, nettle, oat straw (oats), papaya, peas, pumpkin, quinoa seeds, red clover, red raspberry, rice, sage, seaweed soup, sesame seeds, spinach, sunflower seeds, sweet potatoes, thistles, turmeric, and vervain.[4]

Domperidone and metoclopramide are unique antagonists of the dopamine D_2 receptor site (dopamine causes a decrease in prolactin levels), which are used off-label to treat hypoprolactinemia (insufficient milk supply), used to increase prolactin levels. Of all the prescription galactogogues, domperidone seems to hold the most promise. Dr Tom Hale recently obtained Orphan Drug Status Designation from the Food and Drug Administration (FDA) to study and develop domperidone as a dedicated prescription drug for the treatment of hypoprolactinemia. Volume of milk production per day has increased in most, but not all, women, with increases in milk volume occurring rapidly, generally within 48 hours. Domperidone rapidly facilitates prolactin release from

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the pituitary within an hour and leads to sustained, increased plasma levels soon after; even in nonlactating women, levels rise almost 10-fold. Doses are usually 10 to 20 mg 4 times a day or 30 mg 3 times a day. Most breastfeeding mothers take the drug for 3 to 8 weeks or as long as needed to maintain supply.[5,6] A 1-page handout, including withdrawal algorithms, is available at www.nicebreastfeeding.com under "Counseling Tips."[7] An issue that limits its use is that domperidone currently does not have prescription status in the United States. In addition, despite having Orphan Drug Status designated by the FDA for treatment of insufficient milk supply, the FDA has tried to limit its use as an off-label drug to increase milk supply due to apparently unrelated cardiac issues in a different patient population.[8]

Unlike metoclopramide, domperidone does not cross the blood–brain barrier and does not tend to have adverse effects such as drowsiness or depression and, especially, tardive dyskinesia. Metoclopramide is dosed at 10 mg 3 to 4 times a day for 1 week and then gradually decreased over the next week. Milk supply usually increases within several days. Mothers must empty and/or pump breasts 6 to 8 times a day and make sure that the breasts are emptied completely by nursing the baby or by using a breast pump, even at night.[9] Another drug used off-label as a galactogogue is metformin. Its action is not known but may be related to its precursor, galegin, which is the active ingredient of the herbal galactogogue, Goat's Rue. Its dose is 500 to 2500 mg per day taken in 2 divided doses for 3 to 10 weeks.[10] All 3 reviewed drugs result in low concentrations in breast milk that do not affect the infant.[11]

A lack of letdown is rarely a problem for breastfeeding mothers, and when it is, pharmacological solutions are often not needed. Many times a good latch by the baby will solve the problem, and if not, breast compression may help. When these methods fail, a nasal spray containing oxytocin may stimulate the letdown reflex in the mother. The dosage for use is one spray in one or both nostrils 2 to 3 minutes before nursing or pumping of breasts. There are compounding pharmacists in the United States who can and will compound an oxytocin nasal spray when the patient has a doctor's prescription.[12] Science is rapidly expanding in researching biologics, and recombinant human prolactin is no exception. In a study to determine the efficacy of recombinant human prolactin to treat insufficient milk supply, this biologic apparently was efficacious for both mothers of preterm infants with lactation insufficiency and mothers with prolactin deficiency. The authors recommended that long-term safety and efficacy studies be conducted.[3]

Not all mothers have access to off-label drugs nor desire to take prescription drugs to increase milk supply. Galactogogue herbals and foods are regulated by the FDA as foods and not medicines, as long as only "affects body function" claims and not "medical" claims are made. Because there is easier access to these types of galactogogues, the necessity exists for consumers to be well informed and have a real need for treatment before taking any herbal. Most knowledge for herbal use comes from the systematic collection of data in Germany by the German Commission E Monographs.[13] Several published texts provide useful herbal and food galactogogue information, including the following: *The Nursing Mother's Herbal*,[14] *Medications and Mothers' Milk*,[11] *Nonprescription Drugs for the Breastfeeding Mother*,[15] and *The Galactagogue Recipe Book*.[4]

The following represents a list of some of the more commonly used herbal and food galactogogues, along with usual galactogogue dosing (for more inclusive information, see the articles, "Common Herbs and Foods Used as Galactogogues"[16] and "Medications and Breastfeeding: Current Concepts,"[17] available at www.nicebreastfeeding.com under "Counseling Tips"[7]):

Alfalfa (*Medicago sativa*): Up to 60 g daily (1-2 capsules 4 times a day)
Anise (*Anisi fructus*): 3.5 to 7 g as tincture or tea, 5 to 6 times a day
Barley (*Hordeum vulgare*): 15 g of barley extract, 1 cup to 2 cups of tea daily; 1 bottle of beer daily
Blessed Thistle (*Cnici benedicti herba*): Up to 2 g, in capsule form, daily
Caraway (*Carvi fructus*): 1.5 to 6 g daily as tincture, tea, or essential oil
Chaste Tree Fruit, Chasteberry, Vitex (*Agni casti fructus*): 30 to 40 mg daily as an alcoholic extract (50% to 70% alcohol)
Coriander, Cilantro (*Coriander fructus*): 3 g daily as tea
Dandelion (*Taraxaci herba*): 5 g, in capsule form or as tincture or tea, 3 times a day
Dill (*Anethi fructus*): 3 g daily as tincture or tea
Fennel (*Foeniculi fructus*): 0.1 to 0.6 mL of oil (equal to 100-600 mg) daily
Fenugreek (*Foenugraeci semen*): 6 g, in capsule form, daily
Garlic (*Allii sativa bulbus*): 4 to 9 g, in capsule form, daily
Goat's Rue (*Galegae officinalis herba*): 1 to 2 mL of tincture, 2 to 3 times a day
Hops (*Lupuli strobulus*): 500 mg of dry extract daily, 1 cup to 2 cups of tea daily, 1 bottle of stout beer daily
Malunggay, Moringa (*Moringa oleifara*): 250 mg, in capsule form or as tea, 2 times a day
Marshmallow Root (*Althaeae radix*): Two 500 mg capsules 3 times a day or 60 g daily as tincture or tea
Milk Thistle (*Cardui mariae herba*): 12 to 15 g daily as infusion (equal to 200-400 mg of silibinin
Oat Straw, Oats (*Avenae stramentum*): 100 g daily
Quinoa (*Chenopodium quinoa*): 45 g daily
Red Raspberry (*Rubi idaei folium*): 2.7 g as three 300 mg capsules 3 times a day or daily as tincture or tea
Red Clover (*Trifolium pretense*): 40 to 80 mg daily as tincture or tea
Stinging Nettle (*Urtica dioica* and *Urtica urens*): 1.8 g as one 600 mg capsule 3 times a day, 1 cup of tea 2 to 3 times a day, 2.5 to 5 mL of tincture 3 times a day
Vervain (*Verbena officinalis*): 30 to 50 g daily as tea

The doses mentioned above represent medicinal doses. Food equivalent amounts of these herbals and many others can be found in *The Galactagogue Recipe Book*.[4]

As readers of this journal know, breastfeeding has innumerable positive health implications for breastfeeding mothers and children. Therefore, breastfeeding is recommended for all willing and able mothers and infants. Yet there are ever-present obstacles to successful breastfeeding, even with the most motivated mothers. One major obstacle is the prevalence of insufficient milk supply, which may be as high as 15% in new mothers.[3] The causes are many, and all possible causes should be investigated and considered. As part of this consultative evaluation, the selection and use of galactogogues can be a viable and reasonable choice. Information presented in this article can be the basis for making objective and informative decisions.

Author Note

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. ■

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