



Dosing Herbs in Children

Most herbs are safe to use in children as long as the dose is adjusted appropriately. There are several universally accepted pharmacological rules that apply when calculating herbal doses for pediatric cases, however dosing in children always requires good clinical judgement, under supervision of a properly licensed practitioner, and should be tailored to each individual case. Dosing rules and calculations can be applied based on either age, weight or body surface area (BSA), with weight and BSA-based formulas likely being the most relevant and clinically useful.

Age-based Rules

Young's Rule: Best for ages 2-12 years old

>> Age (in years) divided by age + 12 = percentage of adult dose

Fried's Rule: Best for infants and up to 2 years old

>> Age (in months) divided by 150 = percentage of adult dose

Weight-based Rules

Clark's Rule: Weight (lbs.) divided by 150 = percentage of the adult dose

Augsberger: Reflects the faster metabolism of children and a good approximation to a body surface area curve in children

>> Weight (kg) x 1.5 + 10 = percentage of adult dose

Salisbury Rule: Considered the closest approximation to BSA calculations

>> Weight (kg) x 2 (if weight <30 kg) = percentage of adult dose

>> Weight (kg) + 30 (if weight >30 kg) = percentage of adult dose

General Tips for Using Herbs with Children

- Poor adherence to treatment is a major problem in pediatrics, and the issue of taste in herbal medicine is a significant challenge to clinicians.
- Cooperation of the caregiver is essential, and behavior modification strategies such as an appropriate reward can increase compliance, as well as role-modelling and taking herbs together as a family.
- Ideally early exposure/introduction to herbs is helpful, starting with single herbs with a pleasant taste (e.g. elderberry or chamomile) before moving on to those that are more bitter.
- Protocols should also be simple and compatible with life's busy demands.
- Sweetening agents such as honey or maple syrup, glycerin, or high quality/low sugar juices (e.g. apple or pear concentrate) can be useful.
- The issue with tinctures (e.g. alcohol) in children is controversial, however at correct doses the amount of ethanol is still very low and rarely problematic.
- Tablets can be opened/crushed or ground (coffee grinder or mortar & pestle) and mixed into honey, yogurt or apple sauce.

Materia Medica for Children: Indications & Safety

Note: If an herb is not on this list it is likely because there is minimal rationale (either scientific or traditional) for its use in children and better options are available based on safety and/or clinical relevance.

| Herb | Key Indications | Safety Information |
|----------------------|---|---|
| Albizia | Has been used in allergy and inflammation | No safety information available. |
| Andrographis | Traditionally used in Ayurveda to treat bowel complaints in infants and children. An immune enhancer to help prevent and resolve bacterial and viral infections. <i>[i]</i> | Considered safe for children based on several lines of evidence. <i>[ii,iii]</i> |
| Ashwagandha | Has been used as a mild sedative for behavioral insomnia and during times of increased stress and when recovering from trauma, illness, or failure to thrive. | Trials in children did not show adverse effects. <i>[i]</i> Is traditionally used in children in Ayurveda to treat failure to thrive. |
| Asian/Korean Ginseng | May be effective in improving inattentiveness in ADHD children. <i>[v,vi]</i> | Adverse effects are not expected if taken at recommended doses. |
| Astragalus | Traditionally used a tonic to build and strengthen the immune system, and for anemia. | No specific information available but adverse effects are not expected. |
| Bacopa/Brahmi | For stress, sleep, and to aid in cognitive and behavioral disorders such as ADHD. <i>[vii]</i> | Considered safe for children based on several lines of evidence. <i>[viii,ix]</i> Traditionally used in children Ayurvedic medicine. |
| Bilberry | Concentrated extract shown to control progression of myopia. <i>[x]</i> | Concentrated powder was found beneficial in infants with acute dyspepsia and was well tolerated. <i>[xi]</i> |

| | | |
|------------------------|---|---|
| Black Cohosh | Is noted by Eclectic physicians as being of benefit in the treatment of fever in children. | No safety information available. |
| Black Walnut | Traditionally used as an anti-parasitic and for oral thrush. | No safety information available |
| Blue Flag | Traditionally used to treat infantile eczema and regarded as an anti-obesity remedy in Ayurvedic medicine. | No safety information available, but adverse effects are not expected if appropriate doses are used. |
| Boswellia/Frankincense | An anti-inflammatory which may aid with symptoms of asthma. <i>[xii]</i> | No specific information available, but adverse effects are not expected. |
| Burdock | Traditionally used in skin conditions such as acne and atopic dermatitis. | No specific information available, but adverse effects are not expected. |
| Calendula/Marigold | Wound and skin healer topically (diaper rash) and internally and is a mild digestive and immune stimulant. <i>[xiii]</i> | No specific information available, but adverse effects are not expected. |
| California Poppy | Used traditionally as a sedative and analgesic in children. | No specific information available but adverse effects are not expected. |
| Cat's Claw | Has been used to provide immune support and astringency towards the gut in gastrointestinal infections. | Do not use in children under 3 years of age due to lack of clinical data rather than evidence of adverse effects. |
| Chamomile | Has been used in diarrhea, and traditionally used for restlessness, irritability, insomnia, anxiety, stomach cramps, colic, and constipation caused by tension or emotionally upset. <i>[xiv]</i> | Considered safe in children. |

| | | |
|-------------|--|--|
| Chickweed | Traditionally used in infections and skin disorders. | No specific information available but adverse effects are not expected, other than allergy. |
| Cinnamon | Traditionally used to decrease gas, indigestion, colic, diarrhea, nausea, and stomach cramps, and as a warming spice during fever/influenza. | No specific information available but adverse effects are not expected. |
| Cleavers | Traditionally used as a lymphatic agent in infection and skin disorders. | No safety information available, but adverse effects are not expected. |
| Couch Grass | Traditionally used as a demulcent and diuretic in urinary tract infections. | No specific information available, but adverse effects are not expected. |
| Cramp Bark | Traditionally used as an antispasmodic for digestive and respiratory spasm. | No specific information available, but adverse effects are not expected. |
| Cranberry | Traditionally used in urinary tract infections. | Adverse effects are not expected if taken at recommended doses. |
| Dandelion | Traditionally used as a diuretic in urinary tract infections and skin disorders. | No specific information available but adverse effects are not expected. |
| Echinacea | Has been used to provide immune support and reduce recurrence of infection (i.e. URTI, otitis media, UTI) [xv] | Adverse effects are not expected. Has been used in clinical trials in children aged 2-11 years old. [xvi,xvii] |
| Elderberry | Traditionally used to provide immune support and reduce recurrence of viral infection (i.e. URTI) | No specific information available but adverse effects are not expected. |

| | | |
|-----------------|---|---|
| Fennel | Has been used to relieve gas/digestive discomfort and increases appetite. Tea has been administered to children in clinical trials for colic. [xviii] | No adverse effects expected. Avoid ingestion of essential oil. |
| Fenugreek | Traditionally used for hay fever, sinusitis, and as a digestive aid. | No specific information available but adverse effects are not expected. |
| Garlic | Traditionally used in syrups, honey, and oils for antimicrobial and wound healing effects. | No specific information available but adverse effects are not expected other than possible mild GI discomfort. Avoid giving under 3 years of age. |
| Gentian | Low quantities traditionally used for poor appetite and weak digestion. | No specific information available but adverse effects are not expected apart from a reaction to the strong bitter taste. |
| Ginger | Anti-emetic, traditionally used for nausea, motion sickness, and warming the body during chills & fever. [xix] | Generally considered safe for children other than the pungent taste causing compliance issues. |
| Ginkgo | Has been used in clinical trials in children for asthma, ADHD, and dyslexia. [xx, xxi, xxii, xxiii] | Adverse effects are not expected. No side effects were observed in infants with hypoxic-ischemic encephalopathy treated with standardized Ginkgo extract for 2 months. [xxiv] |
| Globe Artichoke | Traditionally used as an anti-emetic and in dyspepsia. | No specific information available but adverse effects are not expected. |
| Goldenseal | Traditionally used as an anti-diarrheal and for infections for the gastrointestinal tract. | Has been used traditionally in GI disorders in children. Contraindicated in neonatal jaundice. |
| Gotu Kola | Traditionally used to enhance concentration, memory, and alertness while having mildly relaxing effects. May be useful in ADHD. | Adverse effects are not expected. |

| | | |
|----------------|--|---|
| Grindelia | Traditionally used as an expectorant for unproductive cough and respiratory spasm. | No specific information available but adverse effects are not expected. |
| Hawthorn | Traditionally used for easy bruising and strengthening blood vessels. | No specific information available but adverse effects are not expected. |
| Holy Basil | Has been used as immune support during infection (clinical trial showing oral antibacterial activity) [xxv] | No specific information available but adverse effects are not expected. |
| Hops | Traditionally used for nervous digestion, stomachache, low appetite, sleeplessness, excitability and restlessness. | No specific information available but adverse effects are not expected. |
| Horse Chestnut | Traditionally used topically for easy bruising and wound healing. | Cases of toxicity in children have been reported, however cases may have involved ingestion of the seed capsule. |
| Kava Kava | Traditionally used children for general debility, stomach disorders and "fretting". | No specific information available. The Australian Therapeutic Goods Administration recommends should not be taken by children under 12. |
| Lavender | Traditionally used for sleep disturbance/calming effects and as topical wound healer. | No specific information available but adverse effects are not expected. |
| Lemon Balm | Traditionally used for sleep disturbance/calming effects, respiratory infections and digestive complaints. | No specific information available but adverse effects are not expected. |
| Licorice | Traditionally used to soothe dry spastic cough, soothe digestive & respiratory infection and inflammation. | Do not exceed amounts above licorice candies or as a mild flavoring agents. |

| | | |
|--------------------------|--|---|
| Marshmallow | Traditionally used to soothe mucus membranes of the digestive, urinary, and respiratory tracts. | No specific information available but adverse effects are not expected. |
| Meadowsweet | Traditionally used for fever, digestive upset, headache and muscle pain. | Avoid in children under 12 due to theoretical possibility of Reye's syndrome. |
| Milk Thistle | Has been used to protect the liver and aid in heavy metal detoxification and food allergy. | No adverse effects expected. Children given silymarin in clinical trials show a benefit without adverse effects. [xxvi] |
| Mullein | Traditionally used to treat earaches (warm oil applied topically to eardrum), and for soothing irritated mucus membranes in the throat and lungs. | No specific information available but adverse effects are not expected. |
| Myrrh | Has been used to aid locally in tonsillopharyngitis as a vulnerary and antiseptic. | No specific information available but adverse effects are not expected. |
| Nettle (Stinging Nettle) | Highly nutritive, lymphatic and diuretic traditionally used in edema, swollen glands and to heal the digestive tract after gastritis/diarrhea. May aid in allergic rhinitis and atopic dermatitis. | No specific information available but adverse effects are not expected. |
| Oats | Traditionally used to support the nervous system in low mood, or restlessness and to aid with physical & mental fatigue. It also a topical wound healer towards the skin. | No specific information available but adverse effects are not expected. |
| Oregon Grape | Has been used in skin conditions such as acne and atopic dermatitis. | Berberine has been used to treat diarrhea and giardiasis in children suggesting that berberine-containing plants may be used. However, not recommended for children under 12 years of age and contraindicated in neonatal jaundice. |
| Passionflower | Traditionally used as a sedative and antispasmodic for asthma, headaches, hyperactivity and sleep disturbance. | No specific information available but adverse effects are not expected. |

| | | |
|----------------------------|--|---|
| Red Raspberry Leaf | Traditionally used to relieve nausea, vomiting, diarrhea and dyspepsia. | No specific information available but adverse effects are not expected with the recommended dosage. |
| Rehmannia | Anti-inflammatory and adrenal tonic which may have use in autoimmune disorders and recurrent infections. | No adverse effects are expected if taken within the recommended dosage. |
| Rhodiola | Has been used to support the HPA axis and modify stress response. May have a role in ADHD and Autism Spectrum disorder. | No safety information available. |
| Rosemary | Traditionally used to reduce nervous tension, promote circulation, and have a calming effect on the digestive system. Also used in digestive and respiratory tract infection. | No safety information available. |
| Sage | Traditionally used as gargle in tonsillopharyngitis for antimicrobial effects and reduce mucus production. Also used to reduce gas/bloating and improves digestive function. | No adverse effects are expected if taken within the recommended dosage. |
| Schisandra | Has been used as an adaptogen to support liver detoxification and for cognition enhancement. Tincture has been used safely to treat infantile diarrhea. | No specific information available but adverse effects are not expected. |
| Shatavari | Used traditionally as a nutritive tonic in children. | No specific information available but adverse effects are not expected. |
| Siberian Ginseng/Eleuthero | Traditionally used as a tonic for children to improve health and stamina. May support the HPA axis & modify stress response and help treat recurrent infections. May have use in ADHD and hyperactivity. [xxvii] | No specific information available but adverse effects are not expected. |
| Skullcap | Traditionally used for calming effects on the nervous system such as in sleep disturbance and restlessness/hyperactivity. Eclectic physicians recommended skullcap tea to aid with teething. | Adverse effects are not expected if taken within the recommended dosage. |

| | | |
|-----------------|--|---|
| St. John's Wort | Traditionally used to treat earaches (warm oil applied topically to eardrum), bruises, nerve pain, and conditions of the nervous system such as anxiety and hyperactivity. | Tried successfully for the treatment of depression in children under 12 years old. Was well tolerated and no adverse events were reported. [xxviii] |
| Thuja | Has been used as an antiviral both topically and internally (e.g. ringworm, warts) | No adverse effects are expected if taken within the recommended dosage. |
| Turmeric | Traditionally consumed in the diet of various cuisines. Curcumin was well-tolerated in one study as an adjunctive treatment for IBD. [xxix] | No specific information available but adverse effects are not expected. |
| Valerian | Traditionally used a relaxing herb for stress, asthma, and sleep disturbance. | No safety information available, however it is recommended to be avoided in children under 3 years old. |
| Willow | Traditionally used to treat headaches, fever, pain and toothache. | Avoid in children under 12 due to theoretical possibility of Reye's syndrome. |
| Wild Yam | Traditionally used as an anti-inflammatory and antispasmodic for digestive pain. | No specific information available but adverse effects are not expected. |
| Yellow Dock | Traditionally used in constipation and weak digestion. | No specific information available but adverse effects are not expected. |
| Zizyphus | Has been used for calming properties and as a gentle nervous system tonic. | No specific information available but adverse effects are not expected. |

Herbs Best Avoided in Children

Bugleweed: Due to anti-thyroid activity caution is advised.

Turkey Rhubarb: Do not use in children under 12 years of age due to stimulant laxative effects.

Pokeroot: No safety information available. Has been used historically in older children at adjusted doses but is likely best avoided.

Wormroot: No safety information available, best avoided in children.

Disclaimer:

The following information is meant for medical professionals only and is not a substitute for individualized medical care or be taken as specific advice for any patient. It is recommended that practitioners always consult the medical literature before making a decision about the use of herbs in children.

Primary References:

- Bone, K., Simon Mills, M. C. P. P., & FNIMH, M. (2012). Principles and practice of phytotherapy: modern herbal medicine. Elsevier Health Sciences.
- Bove, M. (2001). An Encyclopedia of Natural Healing for Children. McGraw Hill Professional.
- Mills, S. Y., & Bone, K. (2004). The essential guide to herbal safety. Elsevier Health Sciences.
- Santich, R., & Bone, K. (2008). Phytotherapy essentials: healthy children-optimising children's health with herbs. Phytotherapy Press.

Additional References

- Cáceres, D. et al. Prevention of common colds with *Andrographis paniculata* dried extract. A Pilot double blind trial. *Phytomedicine*. 1997;4(2):101-104.
- Spasov, A. et al. Comparative controlled study of *Andrographis paniculata* fixed combination, Kan Jang and an Echinacea preparation as adjuvant, in the treatment of uncomplicated respiratory disease in children. *Phytother Res*. 2004;18(1):47-53
- Shakhova, E. et al. [Effectiveness of using the drug Kan-Yang in children with acute respiratory viral infection (clinico-functional data)]. *Vestn Otorinolaringol*. 2003;(3):48-50.
- Enkataraghavan, S. et al. (1980). The comparative effect of milk fortified with *Aswagandha*, *Aswagandha* and *Punarnava* in children—a double-blind study. *J Res Ayur Sid*, 1, 370-385.
- Lee SH, Park WS, Lim MH. Clinical effects of korean red ginseng on attention deficit hyperactivity disorder in children: an observational study. *J Ginseng Res*. 2011;35(2):226-234. doi:10.5142/jgr.2011.35.2.226.
- Ko, H. et al. (2014). Effects of Korean red ginseng extract on behavior in children with symptoms of inattention and hyperactivity/impulsivity: a double-blind randomized placebo-controlled trial. *Journal of child and adolescent psychopharmacology*, 24(9), 501-508.
- Kean, J. et al. (2017). Systematic overview of *Bacopa monnieri* (L.) Wettst. dominant poly-herbal formulas in children and adolescents. *Medicines*, 4(4), 86.
- Kean, J, et al. A Randomized Controlled Trial Investigating the Effects of a Special Extract of *Bacopa monnieri* (CDRI 08) on Hyperactivity and Inattention in Male Children and Adolescents: BACHI Study Protocol (ANZCTRN12612000827831). *Nutrients*. 2015;7(12):9931-9945. Published 2015 Dec 2.
- Dave, U, et al. An open-label study to elucidate the effects of standardized *Bacopa monnieri* extract in the management of symptoms of attention-deficit hyperactivity disorder in children. *Adv Mind Body Med*. 2014;28(2):10-15.
- Omar, I. A. N. (2018). Effect of bilberry extract on slowing high-myopia progression in children: 2-year follow-up study. *Clinical Ophthalmology (Auckland, NZ)*, 12, 2575.
- Tolan, L. et al. The use of bilberry powder in dyspepsia in infants. *Pediatrics*, 18(4), 375-379.
- Clark, C. et al. (2010). Herbal interventions for chronic asthma in adults and children: a systematic review and meta-analysis. *Primary Care Respiratory Journal*, 19(4), 307-314.
- Panahi, Y. et al. (2012). A randomized comparative trial on the therapeutic efficacy of topical aloe vera and *Calendula officinalis* on diaper dermatitis in children. *The Scientific World Journal*, 2012.
- Srivastava, J. K., Shankar, E., & Gupta, S. (2010). Chamomile: a herbal medicine of the past with a bright future. *Molecular medicine reports*, 3(6), 895-901.
- Taylor, J. et al. . Efficacy and safety of echinacea in treating upper respiratory tract infections in children: a randomized controlled trial. *JAMA*. 2003 Dec 3;290(21):2824-30

- Cáceres, D. et al. Prevention of common colds with *Andrographis paniculata* dried extract. A Pilot double blind trial. *Phytomedicine*. 1997;4(2):101-104.
- Spasov. A. et al. Comparative controlled study of *Andrographis paniculata* fixed combination, Kan Jang and an Echinacea preparation as adjuvant, in the treatment of uncomplicated respiratory disease in children. *Phytother Res*. 2004;18(1):47-53
- Shakhova. E. et al. [Effectiveness of using the drug Kan-Yang in children with acute respiratory viral infection (clinico-functional data)]. *Vestn Otorinolaringol*. 2003;(3):48-50.
- Enkataraghavan, S. et al. (1980). The comparative effect of milk fortified with Aswagandha, Aswagandha and Punarnava in children—a double-blind study. *J Res Ayur Sid*, 1, 370-385.
- Lee SH, Park WS, Lim MH. Clinical effects of korean red ginseng on attention deficit hyperactivity disorder in children: an observational study. *J Ginseng Res*. 2011;35(2):226-234. doi:10.5142/jgr.2011.35.2.226.
- Ko, H. et al. (2014). Effects of Korean red ginseng extract on behavior in children with symptoms of inattention and hyperactivity/impulsivity: a double-blind randomized placebo-controlled trial. *Journal of child and adolescent psychopharmacology*, 24(9), 501-508.
- Kean, J. et al. (2017). Systematic overview of *Bacopa monnieri* (L.) Wettst. dominant poly-herbal formulas in children and adolescents. *Medicines*, 4(4), 86.
- Kean, J, et al. A Randomized Controlled Trial Investigating the Effects of a Special Extract of *Bacopa monnieri* (CDRI 08) on Hyperactivity and Inattention in Male Children and Adolescents: BACHI Study Protocol (ANZCTRN12612000827831). *Nutrients*. 2015;7(12):9931-9945. Published 2015 Dec 2.
- Dave, U, et al. An open-label study to elucidate the effects of standardized *Bacopa monnieri* extract in the management of symptoms of attention-deficit hyperactivity disorder in children. *Adv Mind Body Med*. 2014;28(2):10-15.
- Omar, I. A. N. (2018). Effect of bilberry extract on slowing high-myopia progression in children: 2-year follow-up study. *Clinical Ophthalmology (Auckland, NZ)*, 12, 2575.
- Tolan, L. et al. The use of bilberry powder in dyspepsia in infants. *Pediatrics*, 18(4), 375-379.
- Clark, C. et al. (2010). Herbal interventions for chronic asthma in adults and children: a systematic review and meta-analysis. *Primary Care Respiratory Journal*, 19(4), 307-314.
- Panahi, Y. et al. (2012). A randomized comparative trial on the therapeutic efficacy of topical aloe vera and *Calendula officinalis* on diaper dermatitis in children. *The Scientific World Journal*, 2012.
- Srivastava, J. K., Shankar, E., & Gupta, S. (2010). Chamomile: a herbal medicine of the past with a bright future. *Molecular medicine reports*, 3(6), 895-901.
- Taylor, J. et al. . Efficacy and safety of echinacea in treating upper respiratory tract infections in children: a randomized controlled trial. *JAMA*. 2003 Dec 3;290(21):2824-30