

# Dietary Supplements in Children



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## KEYWORDS

• Dietary supplements • Children • Homeopathy

## KEY POINTS

- High-quality systematic reviews of use of herbal or homeopathic remedies in children often suffer from design flaws, such as not following PRISMA guidelines, inconsistent outcome measurements, and paucity of high-quality studies.
- Homeopathic remedies demonstrate lack of efficacy for pediatric patients and are associated with risk of serious adverse reactions, particularly with teething products.
- High-risk supplements used in adolescents include energy drinks, which are associated with adverse behaviors and medical complaints. Children should not consume more than 2.5 mg/kg or 100 mg of caffeine daily.
- With an increase in obesity in children, the use of weight-loss supplements is concerning. These supplements have a high rate of adulteration with unlabeled stimulants that are associated with serious adverse effects.

## INTRODUCTION

Dietary supplements are a form of complementary and alternative medicine (CAM) that include amino acids, biological/animal extracts, herbals, minerals, and vitamins. Homeopathic remedies are not included in the US regulation of dietary supplements (DS). They are included in this review because of widespread use in infants and concern about safety. This review considers only published systematic reviews or meta-analyses that include children. One notable review of pediatric CAM reviews found that PRISMA guidelines are often not followed for CAM therapy reviews, which creates inconsistency in effectiveness interpretation. The investigators also found only 3 acceptable reviews related to DSs: ivy leaf extract for asthma, *Echinacea* for common cold, and chamomile tea for colic symptoms. Finally, many reviews only contained 1 or 2 studies, highlighting a paucity of evidence.<sup>1</sup>

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## PREVALENCE OF DIETARY SUPPLEMENT USE IN PEDIATRICS

The 2007 National Health Interview Survey conducted by the Centers for Disease Control and Prevention found that 11.8% of children had used a CAM. The most common form of CAM was nonvitamin, nonmineral, natural products (3.9%). Children whose parent used CAMs were more than twice as likely as all children to have used a natural product (9.2%). Of the natural products, the most commonly used in 2007 were *Echinacea* (37.2%); fish oil, omega-3 fatty acids, or docosahexaenoic acid (DHA) (30.5%); combination products (17.9%); and flaxseed oil (16.7%).<sup>2</sup> An update of this survey in 2012 showed so significant change in prevalence, but fish oil became the most commonly used, followed by probiotics. Use of melatonin increased.<sup>3</sup>

Homeopathy was used in 1.3% of children in the 2007 National Health Interview Survey<sup>2</sup> and in 1.8% of children in the 2012 survey.<sup>3</sup> In a later systematic review, prevalence rates were 0.8% to 39.0% lifetime use, and up to 30.0% in the prior year.<sup>4</sup> The Australian National Health and Medical Research Council summarized 57 systematic reviews on effectiveness of homeopathy. They found no reliable evidence that homeopathy was effective for any condition. There were no high-quality, well-designed studies with sufficient sample size to compare homeopathy with placebo or active treatments (Table 1).<sup>5-9</sup>

## ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

It has been estimated that 12% to 68% of parents use CAM to treat children with attention-deficit/hyperactivity disorder (ADHD).<sup>1</sup> A few studies have shown positive benefits on attention and memory with normal doses of multivitamins, omega-3 fatty acids, and *Bacopa monnieri*, whereas other supplements have shown no greater efficacy than stimulants or do not significantly improve symptoms (Table 2).<sup>10-13</sup>

## ASTHMA

A literature search to categorize prevalence of use of CAM in patients with asthma found 17 studies that were of poor or moderate quality. Ten surveys focused on pediatric patients and found prevalence ranging from 33% to 89%. When isolated to more

Author, Year	DS Type	Condition	No. RCTs	Result	Comment
Mathie et al, <sup>6</sup> 2015	Oscillococcinum	Influenza	6	No difference between placebo RR 0.48 (CI 0.17–1.34)	Overall quality poor
Simonart et al, <sup>7</sup> 2011	Various	Dermatologic conditions	12	9/12 trials no positive effect	Positive trials were low quality
Ernst, <sup>8</sup> 2012	Not specified	Eczema	3	No efficacy	All trials had weak methodology
Altunç et al, <sup>9</sup> 2007	Various	Pediatric ailments	16	No efficacy other than mixed results for ADHD and acute diarrhea	Single trials were available for 4/9 conditions

**Abbreviations:** ADHD, attention-deficit/hyperactivity disorder; CI, confidence interval; DS, dietary supplement; RCT, randomized controlled trial; RR, relative risk.

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