

# Honey for treatment of cough in children

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## Abstract

**Question** Cough is a very common presentation among sick children in my clinic. There is almost no day without a child being examined for upper respiratory tract infection and cough. While I understand that no medications are recommended for relief of cough—prescribed or over the counter—is it true that honey might help relieve cough symptoms in children?

**Answer** Most prescribed and over-the-counter preparations for cough in children are not effective and might carry the risk of adverse events. A single dose of honey before bedtime was shown in recent studies to diminish cough and the discomfort experienced by children and their parents. Recent evidence also supports administering a few daily doses, but this practice will need further study to assess its effectiveness and safety.

## Du miel pour soulager la toux des enfants

### Résumé

**Question** La toux est un problème très courant chez les enfants malades qui viennent à ma clinique. Il ne se passe presque jamais une journée sans qu'un enfant soit examiné pour une infection des voies respiratoires supérieures et de la toux. Je sais qu'il n'y a pas de médicaments recommandés pour traiter la toux, qu'ils soient prescrits ou en vente libre, mais est-il vrai que le miel pourrait contribuer à soulager les symptômes de la toux chez les enfants?

**Réponse** La plupart des préparations sur ordonnance ou en vente libre pour la toux chez les enfants ne sont pas efficaces et peuvent entraîner un risque d'effets indésirables. Il a été démontré dans de récentes études qu'une seule dose de miel avant le coucher diminuait la toux et l'inconfort des enfants et de leurs parents. De récentes données probantes permettent aussi de recommander l'administration de quelques doses par jour, mais cette pratique devra faire l'objet de plus d'études pour évaluer son efficacité et son innocuité.

Cough due to upper respiratory tract infection (URI) or cough without preceding infection is one of the most frequent complaints encountered by family physicians and pediatric providers.<sup>1</sup> Cough, more than other symptoms, is disruptive, prevents the sick child and the family from sleeping,<sup>2</sup> and might result in frustration. In the absence of effective antiviral treatment for URI, parents try to find products that will relieve cough until the illness resolves.

### Products for cough

More than half of children younger than 12 years of age use 1 or more products in a given week. Over-the-counter (OTC) products, mostly cough and cold medications, account for most medication exposures.<sup>3</sup> Cough and cold preparations usually combine several medications, including antitussives, expectorants, antihistamines, decongestants, and antipyretics such as acetaminophen.

A Cochrane meta-analysis of 8 pediatric trials, representing 616 children in a community setting with viral-induced cough, reported no evidence for or against the

use of OTC medicines when frequency and severity of cough, cough counts, sputum production, and physician assessments were compared.<sup>4</sup>

Some of the most commonly used OTC medications for cough in children are dextromethorphan (nonselective serotonin reuptake inhibitor and a  $\sigma_1$ -receptor agonist) and diphenhydramine (first-generation antihistamine with anticholinergic, antitussive, antiemetic, and sedative properties).<sup>5</sup> Both medications were found not to be superior to placebo in providing nocturnal symptom relief for children with cough and sleep difficulty.<sup>5</sup> Not surprisingly, sleep quality did not improve in parents after giving these medications to their children.<sup>5</sup>

For years, codeine has also been considered as a treatment, as it might suppress cough through central nervous system action. However, no evidence suggests that codeine is better than placebo for acute cough in children, and the drug's increasingly concerning safety profile prohibits recommending codeine for cough in children.<sup>6</sup>

Some alternative preparations have been trialed in recent years but none of them has been recommended for treatment of cough in children in Canada.<sup>7</sup>

### Honey

There is increasing evidence that a single dose of honey might reduce mucus secretion and reduce cough in children. In a study offering 500 mL of water, water with buckwheat honey, black tea, black tea with sugar, or black tea with buckwheat honey to 25 healthy men, honey showed good demulcent effect and antioxidant properties, and it increased cytokine release, which might have antimicrobial effects.<sup>8</sup>

In 2007, Paul et al reported that in paired comparisons, honey was superior to no treatment or honey-flavored dextromethorphan for cough frequency and severity, bothersome nature of the cough, and child or parent sleep quality as rated by the parents.<sup>2</sup> After giving a single 2.5-mL evening dose of honey to children 2 to 5 years of age in another non-blinded study, mean (SD) cough frequency score improved from 4.09 (0.72) to 1.93 (0.65), compared with only slight improvement for children receiving only supportive treatment (mean [SD] 4.11 [0.78] to 3.11 [0.57]). Honey was also better than dextromethorphan and diphenhydramine, although the same level of improvement was not observed.<sup>9</sup> In a Cochrane review assessing 2 randomized controlled trials with 265 children comparing honey with dextromethorphan, diphenhydramine, and no treatment, honey was found to be better than no treatment, slightly better than diphenhydramine, and equal in effect to dextromethorphan in reducing frequency of cough.<sup>10</sup>

In a study from Israel, children received 10 g of eucalyptus honey, citrus honey, labiatae honey, or silan date placebo before bedtime. Parents of 300 children 1 to 5 years old with URI reported that cough frequency, cough severity, bothersome nature of cough, and child and parent sleep quality improved after treatment in the groups that received honey.<sup>11</sup> Although the study was financially supported by the local honey board, its methods seem solid, and the results are encouraging for future evaluation of honey as a supportive measure for children with cough.

A recent study from Italy provided evidence for the benefit of using 3 consecutive doses of wildflower honey, together with milk, for children with nonspecific acute cough. It was compared with OTC dextromethorphan and levodropropizine, the levo isomer of dropropizine, a peripheral antitussive with no central nervous system activity. Among 134 children, there was a decrease in cough of greater than 50% after treatment compared with baseline in 80% of the honey and milk group and in 87% of the OTC medication group ( $P=.25$ ).<sup>12</sup>

Current accumulating evidence suggests that honey might have a role in treating cough and cold in children, a recommendation made by the World Health Organization as early as 2001.<sup>13</sup>

### Safety profile


Many OTC medications used for cough management in children carry potential risks. Insomnia was reported more frequently in children after giving them dextromethorphan, and drowsiness was reported more commonly in those who were given diphenhydramine.<sup>5</sup>

In general, honey is inexpensive and has an excellent safety profile. However, honey might contain dormant endospores of *Clostridium botulinum*. These can transform into toxin-producing bacteria in infants younger than 1 year of age, leading to infantile botulism.<sup>14</sup> Hence, pasteurized honey can safely be used in children older than 1 year of age.<sup>15</sup>

There was no significant difference between honey versus dextromethorphan and honey versus diphenhydramine in a Cochrane review.<sup>10</sup> Adverse

events included mild reactions (nervousness, insomnia, and hyperactivity) experienced by almost 10% of children in one study with honey. In a study from Israel, no symptoms of hyperactivity, nervousness, or insomnia were documented in the honey treatment groups versus the placebo group.<sup>11</sup>

### Conclusion

Honey can be recommended as a single dose of 2.5 mL before bedtime for children older than 1 year of age with cough. 

### Competing interests

None declared

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