

## Living FRIendly Summaries of the Body of Evidence using Epistemonikos (FRISBEE)

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# Is honey an effective treatment for acute cough in children?

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## Abstract

Cough represents one of the most common reasons for pediatric consultations. There are many available treatments for symptomatic relief, including honey. Despite its wide availability, there is little knowledge about its benefits. Searching in Epistemonikos database, which is maintained by screening 30 databases, we identified three systematic reviews including three randomized trials. We combined the evidence using meta-analysis and generated a summary of findings table following the GRADE approach. We concluded the use of honey probably decreases the severity and frequency of cough, improves the quality of parent's and patient's sleep, and does not have side effects.

### Problem

Cough is a complex physiological event consisting of a violent expiration in order to release secretions, foreign material or bronchospasm airway driving and protect the respiratory system from chemical, infectious, mechanical and thermal agents. Acute cough lasts less than four to eight weeks (depending on the definition used). It is not a disease in itself but a symptom related to many respiratory diseases. Depending on the intensity and frequency of the cough, it often leads to a negative impact on the quality of life for both the child and his family, generating a high number of medical consultations.

It has been suggested that honey, due to its antioxidant properties and the release of cytokines, could be used as treatment.

Despite of being a widely available treatment, there is little information about its effects.

### Methods

We used Epistemonikos database, which is maintained by screening more than 30 databases, to identify systematic reviews and their included primary studies. With this information we generated a structured summary using a pre-established format, which includes key messages, a summary of the body of evidence (presented as an evidence matrix in Epistemonikos), meta-analysis of the total of studies, a summary of findings table following the GRADE approach and a table of other considerations for decision-making.

#### Key messages

- The use of honey probably decreases the severity and frequency of cough, and improves the quality of parent's and children's sleep.
- The use of honey probably leads to little or no difference in adverse effects.

### About the body of evidence for this question

<p>What is the evidence. See evidence matrix in Epistemonikos later</p>	<p>We found three systematic reviews [1],[2],[3] including three [4],[5],[6], randomized controlled trials. Another systematic review [7] was identified in the search, but without included trials, so it is not analyzed in this summary.</p>
<p>What types of patients were included</p>	<p>One study [4] included patients between 1 and 5 years. The second study [5] included patients between 2 and 18 years. The third study [6] included patients between 2 and 5 years.</p> <p>The three studies included patients with upper respiratory tract infections and nighttime cough of less than 7 days.</p>
<p>What types of interventions were included</p>	<p>All of the studies [4],[5],[6] evaluated a single dose of honey 30 minutes before sleep.</p> <p>One study compared against placebo [4] and the other two versus no treatment [5],[6].</p>
<p>What types of outcomes were measured</p>	<p>The outcomes analyzed were:</p> <ul style="list-style-type: none"> <li>Frequency of cough</li> <li>Severity of cough</li> <li>Parent's quality of sleep</li> <li>Children's quality of sleep</li> <li>Side effects</li> </ul>

### Summary of findings

The information about the effects of honey for the treatment of acute cough is based on three randomized trials [4], [5], [6] including 568 patients. All of the studies reported frequency and severity of cough, and parent's and children's quality of sleep. Only one study reported the side effects of honey versus placebo [4].

- Honey probably decreases the severity of cough. The certainty of the evidence is moderate.
- Honey probably decreases the frequency of cough. The certainty of the evidence is moderate.
- Honey probably allows patients to sleep better at night. The certainty of the evidence is moderate.
- Honey probably allows parents to sleep better at night. The certainty of the evidence is moderate.
- The use of honey probably leads to little or no difference in adverse effects, in comparison with placebo. The certainty of the evidence is moderate.

Honey for acute cough in pediatric population				
<b>Patients</b>	Children with acute cough			
<b>Intervention</b>	Honey			
<b>Comparison</b>	Placebo			
Outcome	Absolute effect*		Relative Relative effect (95% CI)	Certainty of the evidence (GRADE)
	WITHOUT Honey	WITH honey		
	Difference: patients per 1000			
<b>Frequency of cough</b> (Likert scale of 7 points: 0 to 6)	Mean improvement in the frequency of cough was 1.1 points better with honey		MD -1.11 (-1.52 to 0.70)	⊕⊕⊕○ <sup>1</sup> Moderate
<b>Severity of cough</b> (Likert scale of 7 points: 0 to 6)	Mean improvement in the severity of cough was 1.1 points better with honey		MD -1.13 (-1.65 to -0.60)	⊕⊕⊕○ <sup>1</sup> Moderate
<b>Parent's quality of sleep</b> (Likert scale of 7 points: 0 to 6)	Mean improvement in parent's quality of sleep was 0.9 points better with honey		MD -0.91 (-1.26 to -0.55)	⊕⊕⊕○ <sup>1</sup> Moderate
<b>Patient's quality of sleep</b> (Likert scale of 7 points: 0 to 6)	Mean improvement in patient's quality of sleep was 1.1 points better with honey		MD -1.09 (-1.61 to -0.57)	⊕⊕⊕○ <sup>1</sup> Moderate
<b>Abdominal pain, sickness and vomiting</b>	13 per 1000	18 per 1000	RR 1.34 (0.15 to 12.17)	⊕⊕⊕○ <sup>2</sup> Moderate
	Difference: 5 patients more per 1000 (Margin of error: 11 less to 143 more)			
Margin of error = 95% confidence interval (CI). RR: Risk ratio, MD: mean difference. GRADE: evidence grades of the GRADE Working Group (see later in this article)				
* The risk <b>WITHOUT honey</b> is based on the risk in the control group of the trials. The risk <b>WITH honey</b> (and its margin of error) is calculated from relative effect (and its margin of error).				
<sup>1</sup> The certainty of the evidence was downgraded to moderate because two studies [5], [6] had risk of bias.				
<sup>2</sup> The certainty of the evidence was downgraded to moderate because only one trial analyzed side effects as an outcome and there is imprecision in the result.				

## About the certainty of the evidence (GRADE)\*

⊕⊕⊕⊕

**High:** This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

**Moderate:** This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate

⊕⊕○○

**Low:** This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

**Very low:** This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

\*This concept is also called 'quality of the evidence' or 'confidence in effect estimates'.

† Substantially different = a large enough difference that it might affect a decision.

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## Other considerations for decision-making

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### To whom this evidence does and does not apply

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- This evidence can be applied to pediatric population between 1 and 18 years with the diagnostic of upper respiratory tract infection and acute cough.
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### About the outcomes included in this summary

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- The frequency and severity of cough have a high impact on sleep quality of both the patient and the parents. These outcomes are critical for decision-making according to the opinion of the authors of this summary. The adverse effects of honey analyzed in this summary were abdominal pain, nausea and vomiting.
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### Balance between benefits and risks, and certainty of the evidence

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- The use of honey seems to be beneficial and safe, with no or minimal risk of side effects such as abdominal pain, nausea and vomiting.
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### What would patients and their doctors think about this intervention

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- Caregivers are part of decision-making process in pediatrics. Some parents may tend to distrust the effectiveness of honey for being a natural treatment, and others may prefer it for the same reason. In both cases it is important to present the available evidence.
  - Given the potential risk of other antitussives, honey would be a preferable alternative in cases where the option for treatment has been made (in many cases the option would be no treatment at all).
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### Resource considerations

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- Honey is a low-cost option for the symptomatic treatment of cough associated to an acute upper respiratory tract infection. It is probably a cost-effective intervention.
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### Differences between this summary and other sources

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- The conclusions of our summary are consistent with those of the systematic reviews identified.
  - The findings of this summary are also consistent with the guideline of the World Health Organization, which recommends the use of honey in the treatment of acute cough [8].
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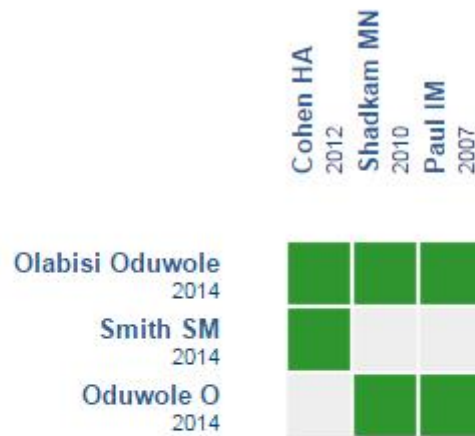
### Could this evidence change in the future?

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- The likelihood that future evidence changes the conclusion of this summary is low due to the existing certainty of the evidence.
  - We are not aware of ongoing trials that could provide new information.
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## How we conducted this summary

Using automated and collaborative means, we compiled all the relevant evidence for the question of interest and we present it as a matrix of evidence.



Starting from any systematic review, Epistemonikos builds a matrix based on existing connections in the database.

The author of the matrix can select relevant information for a specific health question (typically in PICO format) in order to display the information set for the question.

The *rows* represent systematic reviews that share at least one primary study, and *columns* display the studies.

The boxes in green correspond to studies included in the respective reviews.

Follow the link to access the **interactive version**: [Honey versus no treatment or placebo for acute cough in children](#)

## Notes

The upper portion of the matrix of evidence will display a warning of “new evidence” if new systematic reviews are published after the publication of this summary. Even though the project considers the periodical update of these summaries, users are invited to comment in *Medwave* or to contact the authors through email if they find new evidence and the summary should be updated earlier. After creating an account in Epistemonikos, users will be able to save the matrixes and to receive automated notifications any time new evidence potentially relevant for the question appears.

The details about the methods used to produce these summaries are described here <http://dx.doi.org/10.5867/medwave.2014.06.5997>.

Epistemonikos foundation is a non-for-profit organization aiming to bring information closer to health decision-makers with technology. Its main development is Epistemonikos database ([www.epistemonikos.org](http://www.epistemonikos.org)).

These summaries follow a rigorous process of internal peer review.

### Conflicts of interest

The authors do not have relevant interests to declare.

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