**Probiotics: A Possible Preventative Measure of Atopic Asthma?**

**ABSTRACT**

Introduction: Asthma is a chronic inflammatory disease characterised by episodic bronchoconstriction and airway hyper-responsiveness. This is caused by the presence of numerous inflammatory mediators such as histamine, leukotrienes, and prostaglandins. Atopic asthma is a severe form of the disease where levels of IgE are significantly increased. Research has been undertaken on the importance of gastrointestinal health on the development of asthma and control of symptoms. This study seeks to determine if probiotics show a preventative effect on the development and exacerbation of allergic asthma.

Methods: A systematic review of the literature was conducted on the use of probiotics on the prevention and control of atopic asthma. PubMed, EMBASE and Web of Knowledge were searched for relevant articles. Search terms included probiotics, asthma or allergic asthma.

Results: 61 articles were identified, of which 8 were deemed eligible for inclusion. There were 2 prospective nested case-control studies, 1 cohort study, 1 RCT and 2 meta-analyses. From this, we concluded that probiotics do not have a preventative effect on the development of atopic asthma.

Conclusion: Although there is increasing evidence that probiotics have a potential role in the treatment of atopic asthma, the evidence for a preventative effect is not strong. Further research is required to determine the role of probiotics in the prevention and exacerbation of asthma.

**REFERENCES**


**METHODOLOGY**

- **Search strategy:** A comprehensive search strategy was developed using PubMed, EMBASE and Web of Knowledge. Search terms included probiotics, asthma or allergic asthma.
- **Inclusion criteria:** Only articles written in English were included. Articles were included if they were original research, systematic reviews or meta-analyses.
- **Exclusion criteria:** Review articles, comments and editorials were excluded.
- **Data extraction:** Data was extracted using a standardized data extraction form.

**RESULTS**

- **Incidence of diagnosed asthma was 11.2% vs. 10.2% - placebo groups were similar: 52.6% vs. 54.9%. No difference in frequency of exacerbations between groups.**
- **Fewer sensitizations towards aeroallergens after 6 months of intervention.**
- **A mean reduction of immunoglobulin E levels was observed as well as IgE metabolites influenced by bacterial metabolism were excreted differently, as well as decreased concentrations of bacterial metabolites in stool samples.**
- **Blood count of proinflammatory cells was reduced in probiotic groups.**
- **Decreased concentrations of bacterial metabolites in stool samples.**
- **Asthmatic subjects were colonized with 1/5 less Lachnospira species at 3 months.**
- **The risk ratio of incident asthma was 0.96 (95% CI) during follow-up.**
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**DISCUSSION**

- **Asthma in children:**
- **Research Question:** How effective are probiotics in decreasing the risk of asthma development in children with an altered gut microbiome?
- **Methods:** To perform an extensive systematic review on probiotics and their preventative effect in the long term.
- **Results:** Our literature review made use of RCTs, systematic reviews and meta-analysis which forms the basis of the highest level of clinical evidence.
- **Strengths:**
  - Only articles written in English were included in the analysis.
  - Most of the studies required larger sample sizes.
- **Limitations:**
  - Two articles [false negative] observed in a systematic review and prospective case-control study.

**STRENGTHS**

- **Asthma continue to remain one of the most prevalent childhood disease worldwide, where risk factors such as the alteration of gut microbiota have been identified.**
- **How does probiotic administration influence asthma development?**

**CONCLUSION**

The majority of the findings indicated in this literature review suggests that there is no link between probiotic supplementation and primary prevention of asthma development. However, there is no clinical diagnostic marker for early onset asthma. Thus, more research is necessary before probiotics can be used as a treatment for asthma.