

Measure of improvement in nasal muco-ciliary clearance and PNIFR (peak inspiratory flow rate) in children with allergic rhinitis.

Aivazis V, Bourli E, Maratou E et al. Study of Mucociliary Clearance and Peak Nasal Inspiratory Flow Rate in Children Before and After Therapy with Natural Cellulose Powder.

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Clinical Study Results Summary

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Study of mucociliary clearance in children with allergic rhinitis, before and after a six week therapy with natural cellulose powder

Background: The aim of the study was to estimate the nasal mucus clearance before and after monotherapy with natural cellulose administered in the form of inhaled powder in children with allergic rhinitis.

Method: One hundred (100) children: 53 boys and 47 girls were selected. Mean age of the study group was 7.96 years (range 1.5 - 8 years). All children had a positive medical history for allergic rhinitis. Seventy eight out of 93 children (83.8%) who were subjected to allergological investigation had high serum total IgE immunoglobulin, specific IgE antibodies or positive skin prick tests. Mucociliary clearance was determined in vivo by means of a simple non invasive dye method (Edicol Orange 3%+ CaHPO₄·2H₂O 97%). Mucociliary clearance was measured once before starting therapy and one more time 2 days after the child had received a six week therapy.

Results: The clearance reduced from 39 minutes measured before therapy to 18.15 minutes after therapy. The reduction was statistically significant ($p < 0.001$). In the beginning of the clinical trial 51

out of 100 children had abnormally prolonged clearance with a mean value 55.23 min (range 31-80 min) which became 21.1 min after treatment. Only 5 children did not improve and mucociliary clearance remained abnormally long above 37 minutes.

Conclusion: The significant decrease of clearance observed in children of our study after treatment, especially in those with mean value above 31 minutes is due to the effect of cellulose, since the children received no other therapy. It is apparent that the improvement in clearance may be attributed to regeneration and normalization of the ciliary epithelium. Mucociliary clearance is the first line of defense of ciliated nasal epithelium against inhaled particles such as allergens, pollutants and viruses. Cellulose enhances nasal mucus, which allows the filtration of allergens, to ensure that only clean air reaches the lungs.

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