REPORT ON AN OPEN NON-COMPARATIVE STUDY TO EVALUATE THE EFFECTIVENESS OF NASALEZE PREPARATION FOR PATIENTS WITH ALLERGIC RHINITIS

Investigated preparation: Nasaleze (vegetable cellulose in a spray dispenser).
Manufacturer of the preparation: Nasaleze Ltd, Great Britain
Location where the study was conducted: Federal State Budget Establishment Immunology Institute State Science Centre, Russian Federal Medical Biological Agency, building 24, Kashirskiy Highway, Moscow.
Study director: Chief clinical physician, professor, doctor of medical sciences. N.I. Ilina

Introduction. Basis of the study.

Nasaleze, a micro-dispersed cellulose powder in a spray dispenser, is designed to protect the nasal mucous membrane from contact with pollutants and aeroallergens, as well as other micro-particles, which enter the nasal cavity during breathing. Nasaleze is used to prevent the development of the symptoms of allergic rhinitis (AR): nasal pruritis, swelling of nasal mucus and disruption of nasal breathing, prolific clear liquid discharges from the nose, sneezing attacks, etc. When the cellulose powder from the spray dispenser contacts the nasal mucus, it binds with the mucus of the nasal cavity lining and forms a strong gel-like film that covers the nasal cavity and serves as a natural barrier against aeroallergens.

Nasaleze is made up exclusively of natural components. It is an inert, natural, finely dispersed cellulose powder. It does not contain any systemic or locally active substances. Therefore, it is suitable for children and pregnant women.

Previous studies to evaluate the effectiveness of Nasaleze were based on the patient's subjective evaluation of the severity of AR symptoms under conditions of natural exposure to significantly causative aeroallergens. A study involving nasal provocation tests with measured doses of significantly causative aeroallergens on a backdrop of using the Nasaleze preparation with an evaluation of the changes in nasal obstruction and inspiratory nasal resistance will enable an objective evaluation of the effectiveness of the preparation for AR patients as a means of elimination therapy.

The goal of the study is to evaluate the effectiveness of Nasaleze preparation (vegetable cellulose) for patients with allergic rhinitis (AR).

Materials and methods.

Study Design. Prospective open non-comparative study.

The study included 30 patients, of both sexes (12 men (40%) and 18 women (60%)), suffering from allergic rhinitis and meeting the criteria for inclusion/exclusion. The mean age of the patients was 28.5 ± 2.9 years. The mean duration of illness was 10.7 ± 2.5 years (from 3 to 24 years).

The duration of the study was 3 months (selection of patients) and 7 days for testing and active observation.

Criteria for including patients in the study:

- the existence of the patient's informed consent to participate in the study;
- aged between 18 and 65 years;
- patients with a history of allergic rhinitis for no less than 2 years
- positive skin tests for dust and household or epidermal allergens
- absence of clinical symptoms of allergic rhinitis at the time of the study
- ability to adequately participate in the study process

***Criteria for excluding patients from the study*:**

- pregnancy, lactation
- presence of infections in air paths or nasal sinus cavities
- presence of anatomical anomalies of the nose (polyposis of the nose and paranasal sinuses, hypertrophy of nasal mucus, structural changes of the nasal cavity) that could significantly disrupt nasal breathing
- hypersensitivity to any of the components of the investigated preparation
- lesions of the mucous lining of the nose
- recent surgical interventions in the nasal cavity
- recent injuries to the nose
- smoking less than 4 hours before the testing
- clinical symptoms of rhinal conjunctivitis or bronchial asthma at the time of the study
- indicators of pulmonary function: FVC, FEV_1, PEF<85% of normal values, FVC/ FEV_1 <70% of normal values
- dermatological diseases in the developed stage (psoriasis, atopic dermatitis, contact dermatitis)
- occurrence of acute respiratory disease less than 2 weeks before or at the time of the study
- occurrence of decompensated diseases or acute conditions that could significantly affect the results of the study
- alcoholism, drug addiction, mental unbalance
- probable inability to meet the demands of the clinical study
- participation in any other clinical testing during the last 28 days
- simultaneous use of preparations that could influence the dynamics of the indicators used to evaluate the effectiveness of the therapy (**Table 1**)

Table 1. List of preparations prohibited during the study

Patients were not allowed to participate in the study if they had taken any of the preparations listed below during the period preceding the start of the study or during the study.
Ketotifen (72 hours)
Systemic decongestants (48 hours)
Nasal decongestants (48 hours)
Systemic and/or nasal glucocorticoids (2 weeks)
Antihistamine preparations (14 days)
Antileukotriene preparations (14 days)
Cromoglycates (14 days)
Adrenaline (24 hours)
Non-steroid anti-inflammatory medications (7 days)
Tricyclic psychotropic preparations (21 days)

Brief description of the programme.

During the introductory period, the patients were evaluated according to the criteria for inclusion/exclusion. During visit 1 (after the patient was accepted onto the study) the initial condition of the patient was determined and the peak nasal inspiratory flow (PNIF) was measured. Then a series of nasal provocation tests were conducted: first with a test reference liquid and, in the case of a negative reaction, with measured doses of significantly causative aeroallergens (without the use of Nasaleze), beginning with a minimum dilution of 1/512 with a gradual increase in the allergen dose (in the case of a negative result). The PNIF was measured after the application of each allergen dose. In the case of a positive result, the test was ended and the dilution of allergen at which a reaction was observed was noted. During visit 2 (3±1 days after the first visit) the patient's initial condition was evaluated and the PNIF was measured. Then the research physician sprayed a single dose of Nasaleze into each nasal passage of each patient. After 20 minutes following the application of Nasaleze, a series of nasal provocation tests were conducted with the specific allergen, until a positive result was obtained (using the method described above), after which the PNIF was measured.

The effectiveness of the preparation was evaluated based on a comparison of the nasal provocation test results obtained before and after the use of Nasaleze.

Results of the study.

Description of the group of patients in the study*.*

30 patients, of both sexes (12 men (40%) and 18 women (60%)), suffering from allergic rhinitis and meeting the criteria for inclusion/exclusion took part in the study. The mean age of the patients was 28.5 ± 2.9 years. The mean duration of illness was 10.7 ± 2.5 years (from 3 to 24 years).

The distribution of patients by severity of illness is shown in **Table 2**.

Table 2. Distribution of patients by severity of allergic rhinitis.

Total, n (%)	slight, n (%)	moderate, n (%)	severe, n (%)
30 (100%)	20 (66.7%)	10 (33.3%)	0 (0%)

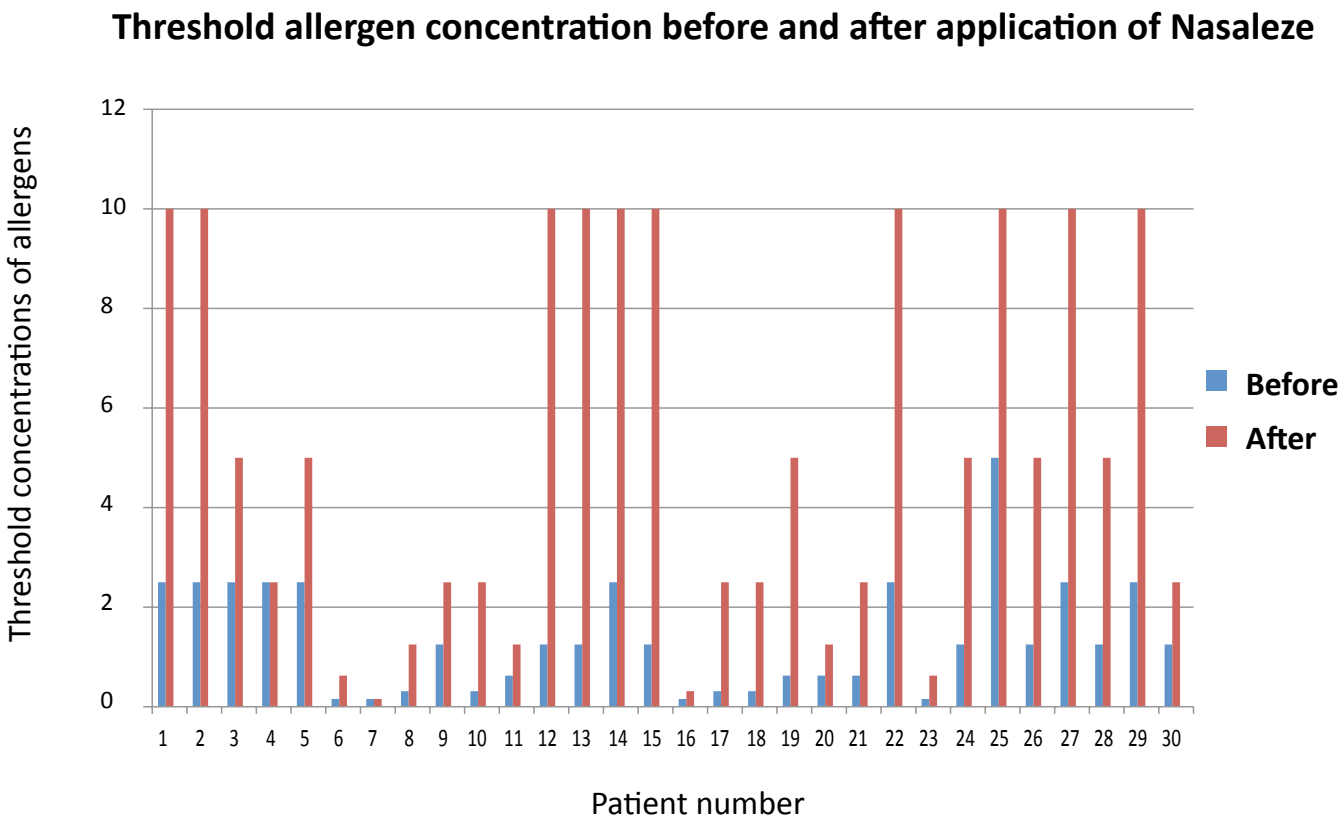
The allergic nature of the illness was confirmed in all the patients. All patients had a sensitivity to dust, 10 patients (33.3%) were also sensitive to household and/or epidermal allergens.

A total of 30 patients (100%) completed the study in accordance with the protocol.

Evaluation of the effectiveness of the therapy.

Of the 30 patients who completed the study, the therapy using Nasaleze was found to be effective in 28 (99.6%) of the patients, which showed a statistically valid decrease in nasal reactivity to a significantly causative allergen. Thus, the mean threshold concentration of allergen during the nasal provocation tests was initially 1250 PNU/ml, and after the application of Nasaleze, 5000 PNU/ml (Wilcoxon criterion $z=4.694$, $p<0,001$). However, in 4 patients, no development of symptoms was recorded, even with provocation by an allergen at the maximum concentration of 10,000 PNU/ml (**Table 3**). The best results were obtained in patients with isolated dust sensitivity and a mild period of rhinitis.

Table 3 .Dynamics of threshold concentrations of allergens before and after the application of Nasaleze.



Two patients for whom the preparation was not found to be effective had a combination of dust and household sensitivity. It is likely that the household sensitivity causes a persistent allergic inflammation of the nasal mucus and increased nasal hyper-reactivity, even though clinical manifestations of rhinitis are absent. Because Nasaleze does not have any anti-inflammatory or anti-allergic action, it is not be expected that the preparation could affect the course of an allergic reaction that is already developed, but as part of a complex AR therapy, the preparation could stop the further uptake of allergen with inhaled air.

Assessment of adverse reactions.

During the entire period of observation, none of the patients taking part in the study showed any adverse reactions.

Conclusion. Thus the study shows that:

1) Under conditions of allergen provocation, Nasaleze has a prophylactic action and prevents the development of an allergic reaction

2) The preparation is less effective in patients who have year-round allergic rhinitis

3) the use of Nasaleze will be effective if it is started before the beginning of contact and continues during the period of contact with a significantly causative allergen

4) it must be considered that after clearing the nose each time, the preparation must be applied again to renew the formation of the protective film

5) the advantage of Nasaleze is the high degree of safety, because it contains an inert, natural, finely dispersed cellulose powder and has no systemic action In connection with the above, Nasaleze can be used by children and by pregnant or breast-feeding women.