# Online supplement

**Effects of intranasal cellulose powder on asthma control in children with mild-to-moderate persistent allergic rhinitis: A single-center, randomized, placebo-controlled trial**

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**Table S1. Changes in VAS scores in the three groups throughout the study**

| | Changes | Treatment A Mean (95%CI) | Treatment B Mean (95%CI) | Treatment C Mean (95%CI) | P value |
|---|---|---|---|---|---|
| **VAS for symptoms** | - | - | - | - | - |
| **Sneezing** | 2w-0w | **-1.53(-2.20, -0.86)** | -0.44(-1.26, 0.38) | -0.25(-1.04, 0.54) | **0.002** |
| | 4w-0w | **-1.34(-2.26, -0.42)** | -0.24(-1.11, 0.62) | -0.48(-1.44, 0.49) | **0.028** |

| | | | | | |
|---|---|---|---|---|---|
| | 8w-0w | **-1.27(-2.10, -0.44)** | -0.51(-1.13, 0.10) | -0.32(-1.25, 0.61) | 0.063 |
| **Nasal discharge** | 2w-0w | -0.68(-1.53, 0.16) | -0.76(-1.59, 0.08) | -0.45(-1.12, 0.22) | 0.750‡ |
| | 4w-0w | **-0.84(-1.57, -0.12)** | -0.76(-1.69, 0.18) | -0.57(-1.50, 0.36) | 0.816‡ |
| | 8w-0w | -0.70(-1.55, 0.15) | **-1.10(-1.81, -0.39)** | **-1.20(-2.16, -0.23)** | 0.408 |
| **Nasal congestion** | 2w-0w | **-0.61(-1.13, -0.08)** | -0.73(-1.56, 0.10) | -0.65(-1.50, 0.20) | 0.937‡ |
| | 4w-0w | **-0.66(-1.31, -0.01)** | -0.78(-1.76, 0.20) | -0.69(-1.55, 0.17) | 0.948‡ |
| | 8w-0w | **-0.97(-1.78, -0.17)** | -0.80(-1.68, 0.07) | -0.54(-1.53, 0.46) | 0.608 |
| **Nasal itching** | 2w-0w | **-1.03(-1.88, -0.18)** | **-1.63(-2.56, -0.71)** | 0.08(-0.46, 0.61) | 0.000‡ |
| | 4w-0w | **-1.29(-2.10, -0.48)** | **-1.80(-2.73, -0.88)** | -0.29(-1.12, 0.54) | 0.000‡ |
| | 8w-0w | **-1.46(-2.23, -0.69)** | **-2.05(-3.01, -1.08)** | -0.34(-1.26, 0.57) | **0.000** |
| **Ocular itching** | 2w-0w | -0.55(-1.25, 0.15) | -0.54(-1.41, 0.34) | -0.50(-1.20, 0.20) | 0.989 |
| | 4w-0w | **-0.84(-1.60, -0.09)** | **-0.85(-1.42, -0.29)** | -0.69(-1.40, 0.02) | 0.828‡ |
| | 8w-0w | **-0.76(-1.52, 0.00)** | **-0.85(-1.64, -0.06)** | **-0.83(-1.44, -0.22)** | 0.949 |
| **Total** | 2w-0w | **-4.39(-6.71, -2.08)** | **-4.08(-7.17, -0.99)** | -1.77(-4.06, 0.51) | 0.116 |
| | 4w-0w | **-5.73(-7.59, -3.14)** | **-4.42(-7.57, -1.28)** | -2.71(-5.71, 0.28) | 0.140 |
| | 8w-0w | **-5.16(-7.69, -2.63)** | **-5.30(-8.03, -2.57)** | **-3.22(-6.00, -0.44)** | 0.240 |
| **C-ACT score** | 2w-0w | **3.55(2.29, 4.82)** | **4.37(3.29, 5.44)** | **4.25(2.67, 5.83)** | 0.367 |
| | 4w-0w | **4.13(2.88, 5.38)** | **5.71(4.38, 7.04)** | **4.81(3.49, 6.13)** | 0.028‡ |
| | 8w-0w | **5.11(3.76, 6.46)** | **6.05(4.76, 7.34)** | **4.85(3.58, 6.13)** | 0.059‡ |
| **FEV$_1$predicted%** | 2w-0w | **7.46(3.18, 11.75)** | **7.46(4.37, 10.55)** | **7.43(2.92, 11.94)** | 1.000 |
| | 4w-0w | **6.11(1.09, 11.12)** | **6.39(2.97, 9.99)** | 3.67(-2.62, 9.96) | 0.592 |
| | 8w-0w | **7.30(1.44, 13.17)** | **5.00(1.11, 8.88)** | 3.51(-2.67, 9.68) | 0.511 |
| **FEV$_1$/FVC (%)** | 2w-0w | 1.66(-1.02, 4.35) | **3.34(1.49, 5.19)** | 2.01(-0.21, 4.23) | 0.363 |
| | 4w-0w | 1.15(-1.54, 3.85) | **4.21(1.35, 7.07)** | 0.03(-3.14, 3.19) | **0.032** |
| | 8w-0w | 1.19(-1.37, 3.76) | 1.35(-1.04, 3.74) | 0.06(-3.07, 3.19) | 0.691 |
| **PEF (L/min)** | 2w-0w | **24.5(11.9, 37.1)** | **24.8(11.45, 38.1)** | **23.8(11.1, 36.4)** | 0.992 |
| | 4w-0w | **27.2(12.0, 42.5)** | **27.3(18.7, 38.9)** | **21.6(9.2, 34.0)** | 0.746 |
| | 8w-0w | **27.2(2.6, 51.7)** | **23.37(6.64, 40.09)** | **27.4(17.8, 37.0)** | 0.926‡ |
| **FeNO (ppb)** | 4w-0w | **-16.3(-25.6, -6.99)** | -6.68(-16.37, 3.00) | -6.60(-15.64, 2.45) | 0.079 |
| | 8w-0w | **-11.2(-19.7, -2.69)** | -6.93(-16.83, 2.98) | -3.63(-12.91, 5.64) | 0.292 |

Note: FeNO was not measured at week 2 per protocol and therefore was not included in the comparison.
* P value was derived from two-way ANCOVA for comparing treatments A, B and C. Statistical significance at significant level of 0.05 is bold face displayed. 95%CI denotes the 95% confidence interval based on one-sample t-test for paired difference between a week and week 0. "8w", "4w", "2w" and "0w" represent the value at weeks 8, 4, 2 and 0, respectively. ‡ indicates that there is a significant interaction between treatment and baseline and thus the labeled p-value for the overall treatment effect is not reliable.

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*Table S2:* **The asthma control level in week 8**

| | Baseline | Week 8 | | |
|---|---|---|---|---|
| | | **Poorly controlled** | **Not well-controlled** | **Well-controlled** |
| **Group A** | **Poorly controlled** | 2 | 0 | 5 |
| | **Not well-controlled** | 0 | 0 | 12 |
| | **Well-controlled** | 0 | 0 | 19 |
| **Group B** | **Poorly controlled** | 0 | 0 | 7 |
| | **Not well-controlled** | 0 | 1 | 15 |

| | | | | |
|---|---|---|---|---|
| Group C | **Well-controlled** | 0 | 1 | 17 |
| | **Poorly controlled** | 1 | 3 | 8 |
| | **Not well-controlled** | 0 | 2 | 10 |
| | **Well-controlled** | 0 | 1 | 17 |
| | **Total** | 3 | 8 | 110 |

All data were expressed as number.
poorly controlled= (C-ACT: 5~15); not well-controlled= (C-ACT: 16~20); not well-controlled= (C-ACT: 16~20)

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54 **Figure legends**

55 *Figure S1:* **A diagram demonstrating C-ACT score**

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57 *Figure S2:* **The appearance, powder transmission system, and usage of the study products in**

58 **groups B and C**

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60 *Figure S3:* **Subgroup analysis based on sensitization.**

61 Each panel demonstrates the relationship between the change of an efficacy endpoint at Week 8 and

62  baseline at Week 0 for each treatment level.

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64  *Figure S4:* **Subgroup analysis based on total IgE**

65  Each panel demonstrates the relationship between the change of an efficacy endpoint at Week 8 and

66  baseline at Week 0 for each treatment level.