

## 임신 중 곰팡이 노출로 아토피피부염 발병에 미치는 영향

### Effect of mold exposure during pregnancy on the development of offspring's atopic dermatitis

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#### ABSTRACT

**Background:** Atopic dermatitis one of the most common chronic skin diseases, is caused by various environmental and genetic factors.

**Methods:** A total of 2609 healthy newborns who were enrolled in the COCOA study (COCO A) from 2008 to 2015 were surveyed for indoor environmental exposure to fungi during gestation and then diagnosed postnatally for atopic dermatitis. The fungi collected during the gestation of 20 normal subjects and 20 infants that developed atopic dermatitis were identified using Illumina's MiSeq platform and analyzed for their diversity and species.

**Results:** A total of 2,609 respondents were surveyed (52.8% male and 47.2% female) Children, 1, 2, and 3 years old diagnosed with atopic dermatitis comprised 15.2%, 15.7%, and 14.1% of the respondents, respectively. The prevalence of exposure to mold during gestation was 1.46 (95% CI, 1.05-2.04) and 1.52 (95% CI, 0.95-2.43), in the first and third years after birth, respectively. One-year-old children with atopic dermatitis and no fungal markers detected in the bathroom environment during gestation accounted for less than 5% (aOR, 1.51; 95%CI, 0.96-2.38) and in the group less than 5 ~ 30% (aOR, 2.21; 95%CI, 1.00-4.89), 3-year-old children had an increased prevalence of atopic dermatitis of more than 30% (aOR, 9.48, 95%CI 1.42-63.13).

**Conclusions:** Exposure to indoor fungi during gestation and infancy is associated with the development of atopic dermatitis in children. The phyla and genera of the fungi in the indoor house dust differed during gestation. This suggests that exposure to indoor fungi during gestation may be associated with the development of atopic dermatitis in children. Future research will be necessary to establish the underlying mechanisms.

Table 1. Prevalence of Atopic dermatitis

	N (%), means $\pm$ SDs
<b>Parent-reported, doctor diagnosed atopic dermatitis</b>	
1세	229/1139 (20.1%)
2세	171/852 (20.2%)
3세	109/600 (18.2%)
<b>diagnosis of atopic dermatitis by physician</b>	
1세	200/1314 (15.2%)
2세	152/966 (15.7%)
3세	104/737 (14.1%)

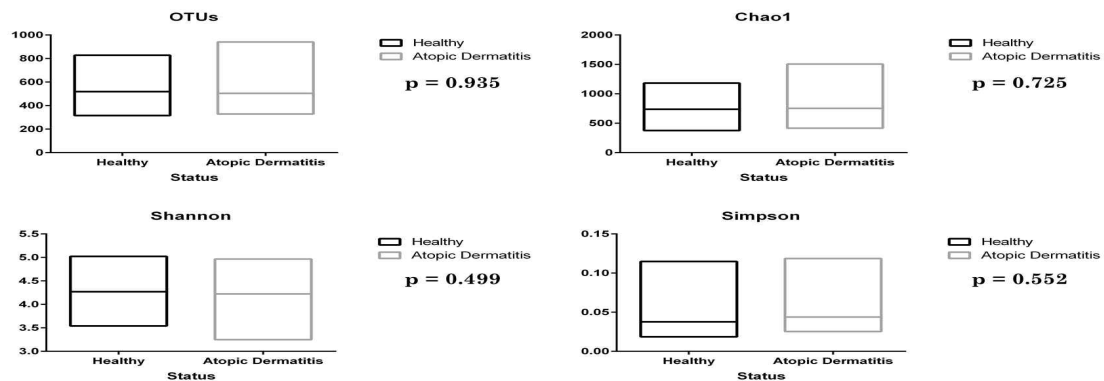


Fig 1. Comparison of OTUs, Chao1, Shannon, and Simpson values from house dust sample in normal group and atopic dermatitis group

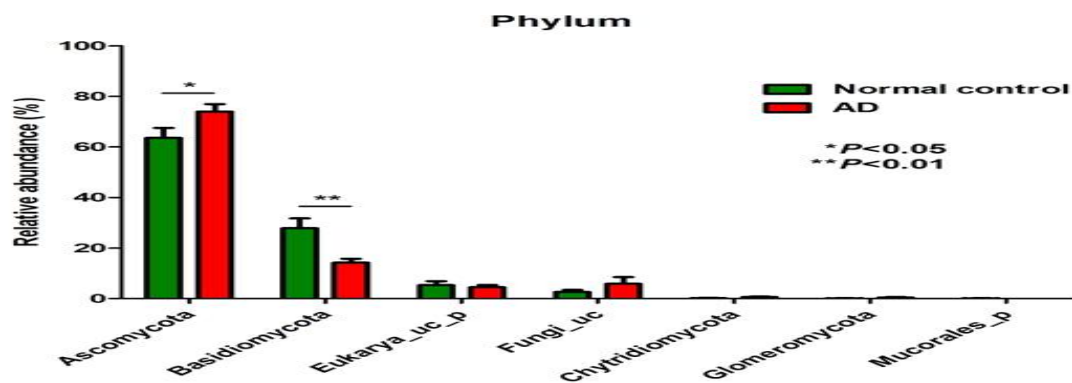


Fig 2. Differences in the fungal communities between healthy and AD groups from house dust samples

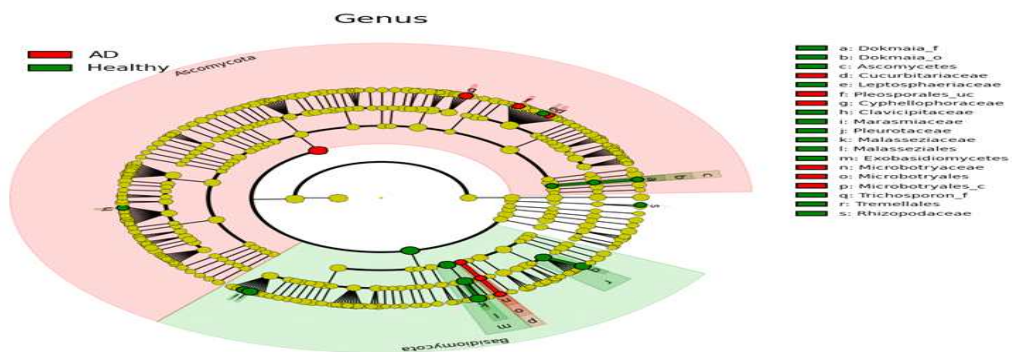


Fig 3. Fungal taxa that were differentially abundant in the house dust mycobiota. Relative abundance at genus level (A), with a log LDA threshold score of 2.0, we found significant difference in the house dust mycobiota between two groups (B), with LEfSe for data analysis and visualization were identified as differentiating between house dust samples from healthy and AD groups.

## References

- [1] Hong SJ, Ahn KM, Lee SY, Kim KE. The prevalences of asthma and allergic diseases in Korean children. Korean J Pediatr 2008;51:343-50.
- [2] Ahn K, Kim J, Kwon HJ, Chae Y, Hahm MI, et al. The prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in Korean children: nationwide cross-sectional survey using complex sampling design. J Korean Med Assoc 2011;54:769-78.