

**Distinct pattern of commensal gut microbiota in toddlers with eczema.**

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**Background:** Recent studies have demonstrated differences in the composition of gut microbiota in infants with and without allergic diseases, particularly eczema. **Methods:** A case-control study involving 21 toddlers (age 3.0 +/- 0.5 years) with and 28 age-matched toddlers without eczema was conducted. Four groups of aerobic gut microbiota were identified and quantitated in stool samples grown on selective media. Three groups of anaerobes were enumerated by fluorescent in situ hybridization followed by quantitative flow cytometry. We also performed molecular typing of lactic-acid-producing bacteria (LAB) and enterococcal isolates to facilitate detailed analysis at species level by bacterial 16S rDNA sequencing. **Results:** Toddlers with eczema harbored significantly lower counts of *Bifidobacterium* [(median 0.14 (25th and 75th percentile: 0.04 and 0.47) vs. 0.71% (0.16, 1.79) of cells acquired, p = 0.003)] and *Clostridium* [(0.28 (0.09, 0.78) vs. 0.83% (0.35, 1.82) of cells acquired, p = 0.012)] but significantly higher counts of total LAB [7.3 (6.1, 8.5) vs. 5.7 (4.4, 7.3) log CFU/g, p = 0.006] in particular enterococci [6.3 (4.8, 7.4) vs. 5.0 (3.4, 6.4) log CFU/g, p = 0.018]. There was no significant correlation between eczema severity score and bifidobacterial counts. **Conclusion:** The results further confirm previous reports that the gut microecosystem differs between children with and without eczema and extend them beyond infancy.