**BACKGROUND**

Healthy growth according to the genetic potential is a complex process not fully unravelled. The gut microbe community (gut microbiota) matures from birth towards adulthood, and is observed to be more immature in stunted children and more rapidly matured in infants who later develop obesity. The fungal gut microbiota (gut mycobiota) is poorly explored in children, but could possibly affect human growth. We are studying whether the gut mycobiota in the first two years of life relates to growth in childhood.

**Material and Method**

In a prospective cohort, we followed 298 healthy offspring from birth until 9 years and recorded their height and weight in this period. We collected faecal samples at 10 days, 3 months, 1 year and 2 years and quantified the fungal abundances by qPCR and identified fungal species by Illumina sequencing. Mixed-effect model analyses were used to account for repeated anthropometric data.

**Preliminary results**

- We have detected gut mycobiota in 56-76% of children of 0-2 years, respectively. In these children, 1-3 species prevailed the mycobiota for each child, mostly Debaryomyces hansenii in breastfed infants and Saccharomyces cerevisiae after 1 year of age.
- The gut mycobiota appears established at 1-2 years, maturing in a manner to become more similar to the mothers’ microbiota.
- Higher fungal DNA concentration at 1 year of age was associated with decreased BMI SDS from 0-1 years ($\beta = 0.12, 95\% CI: -0.18-0.01, p = 0.03$).
- Higher fungal DNA concentration at 2 years of age was associated with increased height SDS from 2-9 years ($\beta = 0.12, 95\% CI: 0.01-0.23, p = 0.04$).

**Discussion and Conclusion**

The early gut mycobiota is related to childhood height growth. It appears that a higher fungal concentration at 1 year is associated with a lower BMI curve centile trajectory in the infant growth phase (0-1 year). Also, a higher fungal concentration at 2 years of age correlates with being at a higher height curve centile in the childhood growth phase (2-9 years). It is plausible that the gut mycobiota could influence growth, and these findings support this theory.

**References**


**Figure 1**

Operational taxonomic units (OTUs, equivalent to fungal species) for 1- and 2-year-old children with sequence faecal samples. Bar charts of the relatively most abundant OTUs for each children. Each OTU is designated a distinct colour. The sample fungal concentrations are on top of each bar.

**Figure 2ab**

Fitted mean trajectories modelling (a) body mass index standard deviation scores (BMI SDS) in children 0-1 years based on high or low fungal DNA concentration (cut-off log (2.028 ITS/ml)) at 1 year, and (b) height SDS in children at 2-9 years based on high or low fungal DNA concentration at 2 years. Models are based on a mixed-effects model.

**P1 Growth and Syndromes**

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