Effect of administration of antibiotics peripartum to wistar rats on bile acid profiles in offspring - DTU Orbit (08/11/2019)

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Vertical transmission of the maternal microbiota is assumed to be crucial for the offspring's development. A disrupted microbiota composition leading to an altered metabolic activity of the microbiota can affect bile acid profiles, which are known to influence host metabolism. Here, we examined whether perturbation of the maternal gut microbiota during pregnancy, induced by administration of either amoxicillin or vancomycin to pregnant rats, influenced bile acid profiles in the offspring. The dams were treated with antibiotics from 8 days before the dams gave birth and continued until weaning (4 weeks later). Blood samples were collected from offspring at ages 2, 4 and 14 weeks, and from dams at the end of treatment. From these blood samples, bile acids were extracted and 22 bile acids were quantified by targeted liquid chromatography mass spectrometry. Comparing the serum bile acid profiles of antibiotic-treated rat dams with non-treated dams, we found that the antibiotic treatments significantly changed the bile acid profiles. However, no effect was seen in the offspring of the antibiotic-treated dams at any age. The bile acid profiles of the offspring did however change significantly with age, where the largest amounts of bile acids were found in the 4-weeks old pups. Future work will involve integrating the bile acid data with physiology and microbiota data of both pups and dams.

**General information**

Publication status: Published
Organisations: National Food Institute, Research Group for Gut Microbiology and Immunology, Research group for Analytical Food Chemistry, Copenhagen Center for Health Technology, Technical University of Denmark
Pages: 48-49
Publication date: 2016

**Host publication information**

Title of host publication: The Danish Microbiological Society Annual Congress 2016 : Programme & Abstracts
Place of publication: Copenhagen
Publisher: American Society for Microbiology
Article number: P25
Electronic versions:

Programme & Abstracts book
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2016 › Research › peer-review