Babies’ gut microbiota is affected by delivery method



It has long been suspected that the way we are born plays a key role in determining which microorganisms would colonize our guts. Now, these suspicions have been confirmed by the largest ever study of newborns’ gut microbiota and the impact of delivery methods.

According to the new research, babies born by Caesarean section have different gut bacteria to those born vaginally, although those differences tend to disappear by the time the children reach between 6 and 9 months of age.

Whether those early differences have further implications for health in later life is, for the moment, unknown, although C-section delivery had previously been associated with an increased risk of developing asthma and allergies, and autoimmune diseases.

In the new study, published in Nature, researchers from the Wellcome Sanger Institute, University College London (UCL) and the University of Birmingham, analyzed 1,679 gut microbiota samples from almost 600 newborns and 175 mothers. They took fecal samples from healthy babies aged 4, 7 and 21 days born in UK hospitals, 314 of whom were delivered vaginally and 282 via C-section. In addition, the study continued to follow a small subset of infants until they were a year old.

Scientists confirmed that the babies born vaginally had received most of their gut microbes from their mothers, whereas C-section babies presented bacteria usually associated with hospital environments.

The researchers also found that the babies’ gut microbiota did not seem to come from their mothers’ vaginas but, rather, from their guts.

Along with the delivery mode, researchers also saw that antibiotics given systematically to women before a C-section can also play a role in early gut microbiota composition in babies.

By the time the infants were weaned (between 6 and 9 months of age), the researchers observed that the differences in gut microbiota composition had mostly disappeared; the only exception was the commensal bacteria Bacteroides, which have been linked to a positive influence on the immune system and help with suppressing inflammation. Infants born by C-section present very low levels of these bacteria or no level at all. And it continues to be that way 9 months later for most of the children. At that age, even though they had been breastfed for at least 6 months, 6 out of 10 babies still had very few or no Bacteroides in their microbiota.