Establishment and Development of intestinal microbiota in preterm neonates

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The profile of intestinal microbiota colonization in the breast-fed infant is considered as ideally healthy. This colonization is essential for the development of the intestine and the immune system, providing the first key step for later health. Due to the frequent use of antibiotics and the long stay at the neonatal unit, the process of colonization of preterm babies results very challenging. To assist in a proper microbiota development in premature infants a detailed knowledge on the process of colonization and on differences from that of full-term infants is needed. We assessed the establishment of the gut microbiota in preterm neonates during the first three months on life and compare it with that of exclusively breast-fed full-term infants. To this end, we used qualitative and quantitative culture-independent methods, DGGE and quantitative PCR respectively, to assess microbiota composition and determined faecal SCFAs levels. We observed profound differences on the gut microbiota composition between both infant groups. Preterm infants showed higher levels of facultative microorganisms and reduced levels of anaerobes such as *Bifidobacterium, Bacteroides* and *Atopobium*. Our results indicate profound alteration on the process of establishment of the microbiota in the preterm infant and the need to consider intervention strategies to counteract them.