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Total protein in meconium of healthy neonates

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Introduction: Meconium formed in the fetal intestine is composed of a number of layers deposited as waste material in the intestinal lumen. Meconium also serves as a specific matrix for numerous proteins derived from swallowed amniotic fluid, shed fetal intestinal cells and secretions. Both the individual composition and the sum of particular protein concentrations of total protein may reflect many physiological and pathological processes during the period of intrauterine development.

Materials & Method: To determine the concentrations of total protein in meconium by assessing individual variations of this parameter in serial meconium portions passed by the neonate and analyzing inter-individual differences in intestinal protein accumulation in utero. Total protein concentrations mg/g in 80 meconium portions from 19 healthy neonates were determined by the Bradford method. The total protein content of all serial meconium portions was considered to equal the amount of total protein accumulated in the fetal intestine in utero.

Results: 1. Total protein concentration in 80 meconium portions mg/g: mean +SD=19.55+8.77, median=18.02, range=5.9–53.97. 2. Total protein accumulation in the fetal intestine calculated for 19 neonates [mg]: mean+ SD=300.90+141.02, median=256.91, range=119.93–581.76.

Conclusion: 1. 10-fold differences between total protein concentrations in neonatal meconium confirm the heterogeneity of protein content accumulated in the fetal intestine. 2. Differences in the total protein amounts accumulated in the intestine of individual fetuses may reflect the role of particular proteins in the intrauterine development. 3. Assessment of total protein in meconium may be an easy and cheap to use laboratory parameter to differentiate physiological and pathological processes in the course of fetal development.

Biography

Paulina Jankowska is pursuing PhD at the Warsaw Medical University in the Department of Biochemistry and Clinical Chemistry.

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