La administración oral de butirato a ratas gestantes con sobrepeso previene alteraciones fetales y placentarias

Oral administration of butyrate to overweight pregnant rats prevents fetal and placental alterations

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Maternal obesity programs anomalies in fetuses and placentas. Butyrate, a product of fiber metabolism from the intestinal microbiota, improves lipid and glucose homeostasis.

Our aim was to address whether oral administation of butyrate prevents fetal and placental alterations in pregnancy from overweight rats.

Female rats fed a control or fatty diet (FD, 28% of fat) were mated with control males[1]. Butyrate (3%) or vehicle, was orally delivered daily during gestation. The rats were euthanized at 21 days of gestation, fetuses, fetal livers and placentas were obtained, and weighed. Maternal and fetal plasma was obtained by decapitation.

Butyrate prevented maternal hypertriglyceridemia and macrosomia in FD fetuses ($p<0.05$). Placentas from FD rats displayed lipid overaccumulation ($p<0.05$) and an upregulation of mRNA levels of lipoprotein-lipase (LPL) ($p<0.05$), fatty-acid-binding-protein 5 ($p<0.01$) and perilipin2 ($p<0.05$) compared to controls. Butyrate prevented LPL increases only in female placenta. The FD fetuses showed lipid overaccumulation in livers ($p<0.01$) that was normalized by butyrate ($p<0.05$).

Oral administration of butyrate prevents the increase in maternal triglyceridemia and partially normalizes the expression of placental lipid transporters. This, in turn, could reduce fetoplacental lipid transport and prevent fetal overgrowth and overaccumulation of liver lipids, clear marker of fetal fatty liver programming.

Keywords

Maternal overweight
Maternal-Fetal Exchange
Placenta
Fatty liver

Conflicts of interest

The authors have declared no conflicts of interest.

References

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