



Gut microbiota and potential for obesity control

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introduction

„human body is more microbe than man !“

gut microbiota...

... is a metabolically active organ

**... plays a critical role in nutrition and energy
expenditure and storage**

investigations on „gut bugs“ I

obesity: only a result of excess calory intake ??

carbohydrate-busting enzymes

→ glycoside hydrolases and polysaccharide lyases

humans → fewer than 100

Bacteroides thetaiotaomicron → 240

investigations on „gut bugs“ II

- **conventionally raised mice versus germ-free mice:**

conventionally raised animals required 29% less calory intake and 42% more body fat than the germ-free animals.

- **exposition of germ-free mice to bacteria versus further germ-free raised mice:**

exposed ones ate 27% less but gained 61% of body fat!!

investigations on „gut bugs“ III

genetically obese
due to mutation of
leptin gene

ob/ob

lean mice,
one mutated
leptin gene

ob/+

lean mice,
two mutated
leptin gene

+/+

ob/ob mice have 50% less Bacteroides and an increased proportion of Firmicutes.

obesity causes a shift in the diversity of gut microbiota!

investigations on „gut bugs“ IV

Fasting-induced adipocyte factor (Fiaf)

= inhibitor of Lipoprotein lipase

suppression of Fiaf via microbial colonisation → increase of LPL activity → storage of triglycerides in adipocytes

reversing the microbial suppression of Fiaf may promote leanness over obesity!

conclusion

**Understanding if the species which aid to caloric intake
can be competitively inhibited by other commensals
leads to interesting ideas in avoiding obesity
predisposition.**
