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## **Effects of ad libitum butter consumption on intestinal microbiota composition and markers of metabolic disorders and general health in middle aged female and male C57BL/6 mice**

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### **Background and Aims:**

Body and abdominal fat accumulation may be a consequence of intestinal dysbiosis leading to lowered levels of short-chain fatty acid (SCFA) metabolites of the enteric microbiome. Since butter is a natural source of SCFAs, we investigated the influence of ad libitum butter consumption on intestinal microbiota composition and on markers of metabolic disorders and general health in middle aged female and male C57BL/6 mice.

### **Materials and Methods:**

Thirty-two conventional Harlan Laboratories C57BL/6 mice aged between 11 – 12 months were randomly divided into two groups (n = 16). Mice in control group 1 received standard mouse chow. Animals in group 2 in addition had ad libitum access to butter. Clinical signs of general health and inflammation were monitored daily. Faecal pellets samples were analysed by qPCR for microbial composition. Histology of relevant organs was carried out on day 60. Metabolic disorder and liver inflammation was determined in plasma samples.

### **Results:**

No significant differences in general health or clinical signs of inflammation between the two groups were observed. The body weights of mice of group 2 were significantly increased compared to those of control group 1. The liver to body weight ratio in butter-fed mice was lowered, but not statistically significant. qPCR quantification showed that butter decreased significantly the C. coccoides and Bacteriodes groups.

### **Discussion:**

Although butter contains high cholesterol and saturated-fat levels, it does not have any negative impact on general health parameters. Possibly, natural ingredients of butter, which are not found in other dietary fats, are responsible for this effect.