High-fat feeding induces mobilization of vitamin C in obese prone rats

In obesity and dyslipidemia, hydrolysis of triacylglycerol (TAG) into non-esterified fatty acids (NEFAs) may contribute to insulin resistance, and production of oxygenated, bioactive polyunsaturated fatty acids may increase oxidative stress. Here we show that after six weeks of high-fat feeding of obese prone rats (Crl:OP(CD)), vitamin C was increased both in liver (P<0.01) and plasma (P<0.001), while both TAG (P<0.01) and NEFA (P<0.001) were lower than in low-fat fed control rats. Hepatic vitamin C biosynthesis was similar between groups, indicating that a new steady state level was established with a higher vitamin C level adequate for supplying the systemic needs. Glucose and insulin sensitivity were unaffected at this stage. Eventually, the mobilization of vitamin C may be seen as a mechanism to protect the host against insulin resistance.

General information
Publication status: Published
Organisations: Department of Biotechnology and Biomedicine, University of Copenhagen
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Pages: 167-169
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Research in Veterinary Science
Volume: 119
ISSN (Print): 0034-5288
Ratings:
BFI (2018): BFI-level 2
Scopus rating (2018): CiteScore 1.82 SJR 0.548 SNIP 0.903
Web of Science (2018): Impact factor 1.751
Web of Science (2018): Indexed yes
Original language: English
Keywords: Vitamin C, Obesity, High-fat diet, Rat, Insulin resistance
Electronic versions:
High_fat_feeding_induces._Postprint.pdf. Embargo ended: 15/06/2019
DOIs:
10.1016/j.rvsc.2018.06.011
Source: FindIt
Source ID: 2435455408
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review