

CITRUS FLAVANONES ALTER THE EXPRESSION OF GENES INVOLVED IN TRIGLYCERIDE METABOLISM IN OLD AGE WISTAR RATS

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Advanced age is associated with development of dyslipidemia and ectopic triglyceride (Tg) accumulation in the liver. Consumption of citrus flavanones, naringenin (NAR) and hesperetin (HES) positively correlates with the improvement of dyslipidemia in rats. However, information about these effects of citrus flavanones when applied to old-aged rats is still lacking. Therefore, we analyzed changes in gene expression of liver X receptor (Lxr), thyroid hormone responsive spot14 protein (Thrsp), fatty acid synthase (Fas) and fatty acid translocase (Fat) in the liver by qPCR and measured serum Tg concentration biochemically. NAR or HES, suspended in vehicle (sunflower oil), were administrated orally (15 mg/kg b.m.) to male 24-month-old Wistar rats (n=5) during 4 weeks. Control groups received vehicle (CON) or stayed physiologically intact (ICON). In comparison to ICON animals, only Fat gene increased in CON group. NAR and HES treatment decreased mRNA expression of Thrsp, Lxr and Fat genes in comparison to CON. Only NAR decreased Fas gene expression, while Tg concentration remained unchanged after both treatments. All changes were statistically significant ($p < 0.05$). In conclusion, nutritional doses of NAR or HES affect mRNA concentration of genes involved in control of Tg metabolism. Serum Tg did not change, but gene expression of Thrsp, Lxr and Fat was lower after both treatments, while Fas was decreased only after NAR. This is of great importance keeping in mind that treatment with NAR or HES could protect liver from Tg de novo biosynthesis and ectopic Tg accumulation, thus preventing liver steatosis and dyslipidemia accompanied with advanced age.