

4. CONCLUSIONS

Concerning the specific aims of the thesis, the following conclusions may be formulated:

1. Additional beneficial effects of the combined treatment by n-3 PUFA of marine origin and anti-diabetic drug rosiglitazone on obesity and related disorders were proven in mice fed high-fed diet. In comparison with either n-3 PUFA or TZD effects alone, the combined treatment was more potent in amelioration of the following adverse phenotypes:
 - a. body weight, body weight gain and body lipid content;
 - b. dyslipidaemia;
 - c. muscle insulin resistance demonstrated as enhanced muscle glycogen synthesis;
 - d. obesity-associated inflammation of adipose tissue; and
 - e. in addition, additive induction of adiponectin was found, especially its multimeric form, which induces insulin sensitivity.

These results on mouse model suggest possible application for human medicine, where fish oil concentrates may enhance efficacy of the treatment by TZD, and reduce the risk of the adverse effect of the TZD-therapy.

2. Relatively specific induction of lipid oxidation by n-3 PUFA in the intestine was found, which may be important for e.g. anti-obesity and hypolipidemic effects of these lipids.
3. Changes in adiponectin concentration as well as distribution of its multimeric forms as a result of low caloric diet were found in human patients.
4. Association between lower levels of adiponectin as well as of its high molecular weight form in plasma and contamination by persistent organic pollutant PCB 153 was proven in obese patients.