

# ABSTRACT

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Title of Thesis **Immunohistochemical analysis of expression of phosphorylated form Smad2 after administration of atorvastatin in experimental atherogenesis**

## Background:

The aim of this thesis was to describe the effects of atorvastatin treatment on the expression of phosphorylated form of Smad2 in atherosclerotic plaques in ApoE/LDLr-deficient mice by immunohistochemical methods. Furthermore, the influence of atorvastatin on lipid spectrum and size of atherosclerotic plaques was observed.

## Methods:

In our experiment there were used C57BL/6J female mice with double deficit of apolipoprotein E and LDL receptor. There was performed the biochemical analysis of blood samples, histological staining with oil red for detection of tissue lipids, quantitative analysis of size of lesions and immunohistochemical analysis of samples containing semilunar valves and aorta for the detection of expression of Smad2. It was done using the method Avidin-Biotin and detection with DAB.

## Results:

Using biochemical analysis we confirmed increased levels of total cholesterol and VLDL after the administration of atorvastatin. Smaller size of atherosclerotic lesions was found in ATV group of mice. Immunohistochemical analysis demonstrated the expression of phosphorylated form of Smad2 in tunica adventitia, tunica media, in atherosclerotic lesions and in endothelium. The expression of Smad2 was stronger after atorvastatin treatment.

## Conclusion:

The administration of atorvastatin resulted in increase of expression of Smad2; this could contribute to antiatherogenic effects of statins.