

# Abstract

The thesis aims to describe the method of model averaging and the construction of confidence intervals for dose estimation within the method *MCP-Mod* that is used for modeling the dose-response relationship. We define the doses  $ED_p$  and  $MED$ , which are estimated in practice. We describe the *MCP-Mod* method, including suitable models and contrast tests. We present information criteria, the ability to determine model weights based on information criteria and discuss their behaviour for different models and a growing number of observations. We also introduce three possible ways of constructing confidence intervals for estimates obtained using the model averaging method. We apply these constructs to the example of dose-response modeling in a simulation study. Lastly, we introduce two new models with two change-points for modeling the dose-response relationship.