

Title: Experimental models of ischemic brain injury

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Abstract:

This bachelor thesis focuses on the experimental models of ischemic brain injury closely related to one of the most common forms of brain damage, the ischemic stroke. This type of brain injury is connected to subsequent serious neurological deficits. The studies of experimental models of ischemic brain injury are therefore essential for primary and secondary research. The first two parts of the thesis are dedicated to brief characterization of stroke with focus on types of stroke, incidence, risk factors and molecular mechanism of injury. Next part summarizes the challenges of experimental modeling of ischemic brain injury and the specifics of small and big laboratory animals. The core of the thesis is the description of 11 most frequently used models. Selected models were divided into focal and global models and in each of these categories were furthermore characterized according to procedural performance, animal mortality or success of lesion induction. The key modifications of models introduced during the years in order to increase the reproducibility of brain injury are described as well. All 11 selected experimental models are summarized at the end of the thesis into a well-arranged table according to their important advantages and most common application area.

Key words: ischemic stroke, experimental models, neurobiology of ischemic damage, focal ischemia, global ischemia