

Abstract

The fertilization is a process during which a male and a female gamete merge so that a new organism may come into being. The sperm-egg fusion is preceded by several essential processes, such as the capacitation, acrosome reaction, the sperm binding to the *zona pellucida* and oolemma, and membrane fusion of the gametes. Numerous proteins, which are located in both sperm and eggs, are major actors in controlling the listed, essential processes. During the process of fertilization these proteins fulfil one or more functions. In mammalian sperm, significant species-specific differences may be found both in their morphology and at the protein level. A complex understanding of species-specific distinctions in sperm structure and functions of key sperm proteins would contribute to a better insight into the process of fertilization, thereby enabling us to better diagnose and subsequently treat the causes of infertility in humans. This bachelor's thesis summarizes the current knowledge of sperm structure and its key proteins that has been acquired through the studies of the following model mammal species: bull, boar, mouse, and human. Further, this thesis brings an interspecific comparison between the studied species.

Keywords: sperm, fertilization, acrosome reaction, capacitation, sperm proteins, bull, boar, mouse, human