Abstract

Prion protein (PrP^C) is connected with the origin of transmissive spongiform encephalopathies (TSEs), fatal diseases that are on the molecular level based on the conversion of the cellular form of prion protein, PrP^C, into the infectious form, PrP^{TSE}. This isoform, exhibiting increased resistance against proteases and common decontamination methods, accumulates in tissues and causes degenerative damages of the central nervous system. Potential physiological function of PrP^C in cells remains unclear, though many efforts have been focused on this research area in past years. Expression of PrP^C was detected especially in neurons, high levels of PrP^C are also present in different types of cells of immune system. Whereas some immunocompetent cells were widely examined, the relationship of PrP^C with the function of others was not studied. PrP^C probably plays a role in differentiation and activation of some immune cells, participates in regulation of cytokine production and other immune processes, affects grow of $CD4^+$ T-cell population and also takes a part in formation of secondary lymphatic organs. This bachelor thesis is focused on summarization of existing knowledge describing the role of the cellular prion protein in cells of immune system, which is important also from the point of view of diagnosis and treatment of TSEs.

Keywords: prion protein, PrP^C, PrP^{TSE}, prion diseases, immune system, immunocompetent cells, phagocytes, lymphocytes, T-cells