

The peritrophic matrix is an acellular envelope which surrounds the food bolus in the midgut of many animal species (especially in insects). It fulfils many functions in the midgut e. g.: protects the gut against an abrasion and against toxic substances, improves the digestion of food and protects the gut epithelium against pathogens. The last function might be the main reason of the occurrence of the peritrophic matrix in large amount of insect species.

The peritrophic matrix is composed of chitin fibres and proteins. Chitin provides the peritrophic matrix strength and flexibility. Chitin fibres can be organised into three elementary structures: random, hexagonal and squared. The size of pores in peritrophic matrix depends on incorporated proteins – especially peritrophins. These pores determine the permeability of the peritrophic matrix for various penetrating molecules including digestive enzymes.

This bachelor thesis is focused on Insecta sensu stricto (Hexapoda) and mainly on the order Diptera, especially bloodsucking species. Following chapters review recent information about the peritrophic matrix and its nomenclature, occurrence, assembling, composition and functions.