

***Pieris rapae* – a nectar feeding butterfly: Composition of the cuticle of the proboscis.**

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Pieris rapae is one of the most common nectar-feeding butterflies in Austria and, in the last century, has spread throughout most parts of the world. Although it was the object of numerous studies, yet little is known about its cuticular structure. The rubberlike protein resilin is considered responsible for enabling the coiling of the proboscis. On the one hand, its structure allows itself to double its length by extension without losing its shape. It can withstand millions of such extension cycles. On the other hand, a high level of energy can be stored in these structures. In the last decades the microscopic methods and resolutions have improved greatly so that it has become possible to make images that allow the detection of resilin.

The Aim of this diploma thesis is to describe the composition of the cuticle of the proboscis. Therefore, images were made using Confocal Laser Scanning Microscopy (CLSM), Scanning Electron Microscopy (SEM) and Light Microscopy (LM).

For the cuticle of the food canal the results of SEM showed a regular lamella-like structure from the proximal to the distal end. However, the CLSM indicated a variation in the composition. With SEM the outer cuticle shows a periodic structure in the bend that changes dramatically in the tip. Such a dramatic change cannot be found with CLSM. These results and the morphology of the sensory equipment will be compared with those of different flower visiting butterflies and butterflies with other feeding techniques.