

## **Abstract**

Auxin is a small molecule that functions as a plant hormone, and it exists in several forms, of which indole-3-acetic acid (IAA) is the most studied one. IAA modulates cell elongation, division, and differentiation by generating local gradients, and it is essential for almost every aspect of plant growth and development. These gradients are established by the cooperation of IAA biosynthesis, metabolism, and transport. A plant responds to both local auxin maxima and minima; thus, it is necessary to regulate auxin metabolism and transport tightly. However, lots of studies show the roles and regulation of auxin metabolism and transport separately, providing quite rarely discussion on the cooperation of these two processes. Hence, this thesis aims to sum up and refer to mechanisms and regulation of auxin metabolism and transport as a whole, rather than separately, and underline the importance of the cooperation of both auxin metabolism and transport in the plant development.