ABSTRACT

Impatiens parviflora and *Impatiens glandulifera* Royle are belong the most invasive plant species. These species originate from Asia and have been successfully colonizating various areas around the world. They are characterized by generative reproduction by producing a huge number of seeds, which, under the influence of touch or air movement, discharging the seeds to an over long distances, which contributes to the rapid spread and colonization of new, extensive areas. In order to be able to control and regulate the spread of these species, knowledge about the ecophysiology of the seeds of these species should be significantly improved. The aim of the study was to analyze selected aspects of *Impatiens parviflora* and *Impatiens glandulifera* Royle seed germination, as well as to determine the influence of temperature, humidity, reduced water potential and exogenous gibberellins, abscisic acid and inhibitors of their synthesis: paclobutrazol and fluridone on seed dormancy and germination, the content of soluble carbohydrates in seeds, and also the sensitivity of seeds to selected phytohormones and reduced water potential. Seeds of both examined *Impatiens* species were characterized by primary dormancy. Seed vigor and viability remained high in seeds stored in the soil and stratified in the laboratory, as well as in seeds in a dry state. So far, the physiological mechanisms responsible for these features have not been fully understood, but they can be associated with the significant sensitivity seeds to abscisic acid and reduced water potential. Our own research showed inter-species differences in quantitative and qualitative composition of soluble carbohydrates in *Impatiens* seeds. Nevertheless, significant similarities were obtained in the presence of soluble sugars present in significant amounts in *Impatiens* seeds. In dormant seeds of both *Impatiens* species, the presence of a dominant trisaccharide was found, which was not classified as any of those already described. A high ratio of its content to sucrose was also recorded, which changed with the seed's maturation.

The explanation of the endogenous causes of seed sensitivity to reduced water potential, selected phytohormones, as well as the unusual pattern of soluble sugar content in seeds requires further analyses. Especially in the context of the invasiveness of *Impatiens parviflora* and *Impatiens glandulifera* Royle, due to the fact that that they prefer moist places, located in forests or at the shore of a lake or a river.