

Polycyclic aromatic hydrocarbons (PAHs) are widely distributed organic pollutants, which are able to enter soil as well as aquatic systems with subsequent deposition in living organisms, especially thanks to their lipophilicity [1-5]. They are intensively studied due to their carcinogenic and mutagenic effects on animal and human cell lines. They demonstrate ability to induce oxidative stress as well as DNA damage, especially after activation by UV radiation. Oxidation stress is connected with generation of reactive oxygen species (ROS), which may serve as signals of initiation of processes leading to programmed cell death [6]. One of the recent studies demonstrates fact that activation of some PAHs (e. g. benz[a]anthracene, fluoranthene or pyrene) by UV radiation is not necessary to damage DNA [7]. Effect of PAHs on plants is still predominantly unknown, except of studies of some PAHs on model plant – *Arabidopsis thaliana*, where induction of oxidative stress was demonstrated [8]. Fluoranthene (FLT), member of PAHs group, is used as model for investigation of PAHs toxicity, especially because of its reduced toxicity in comparison with other PAHs. To better understand the biochemical and cytological responses to FLT, tobacco BY-2 cells as the most suitable plant cell model were treated by fluoranthene. Changes in cell structure and viability as well as nuclear architecture were monitored. In addition, ability of FLT to generate reactive oxygen species was also investigated.