**INTRODUCTION**

Industrial hemp (Cannabis sativa L.) is the non-THC-producing species, one of the oldest crops cultivated all over the world to produce fibre, food products and biomass which is rich in biologically active compounds [1]. Flavonoids and polyphenolic compounds are called plants secondary metabolites; plant tissues from harmful effects of the environment [2].

The aim of this research is to investigate how different sowing density of plants (15 plants per square meter and 80 plants per square meter) influences flavonoids (TFC) and polyphenolic compounds (TPC) accumulation in morphological parts of the plant (stem, leaves, inflorescences) and how the quantity of these biologically active compounds change during six times per vegetation season. Also, to examine an ability of radical scavenging activity (RSA). From previous studies it was known that radical scavenging activity directly correlates with number of hydroxyl groups [3]. Consequently, it can be assumed that the more polyphenolic compounds are found in extract the higher radical scavenging activity should be.

**OBJECT OF STUDY**

Spectrometric tests were used for the identification of phenolic compounds, flavonoids content and radical scavenging activity. All reaction solutions were incubated in the dark and measured using different wavelengths.

**MATERIALS AND METHODS**

**RESULTS**

**CONCLUSIONS**

- Obtained results show that sowing rate doesn’t affect accumulation of total phenolic compounds. However, the highest TPC content was determined in plants collected from sparse area.
- This experiment displays that young fibre hemp (I, II, III, IV, VI vegetation phases) accumulates more TFC in sparse area, but mature plant (V and VI vegetation stages) is more superior under denser conditions.
- This study indicates that inconsiderably more effective radical scavengers were industrial hemp inflorescences and leaves compared to investigated stems. It was demonstrated no significant correlation between radical scavenging activity and the amount of total polyphenolic compounds in industrial hemp stems grown under both densities as well as inflorescences collected from the sparse area.

**REFERENCES**

