

DETERMINATION OF POLICICLIC AROMATIC HYDROCARBONS OF *PRUNUS SPINOSA* FRUITS

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Introduction

Prunus spinosa is a perennial plant growing as a shrub on slopes of wide uncultivated areas, making a thick thorny mass, but it can also be found beside roads, along the channels and in shelterbelts against the wind. It grows in moderate continental climate in northern hemisphere. *P. spinosa* is used in phytotherapy for the treatment of many diseases. Samples of *Prunus spinosa* (blackthorn) were collected, in October 2018, October and November 2019 from Chinteni, Floresti, Faget, Borhanci and Pata, area from Cluj County (figure 1). The samples were collected from two different zones in each area.

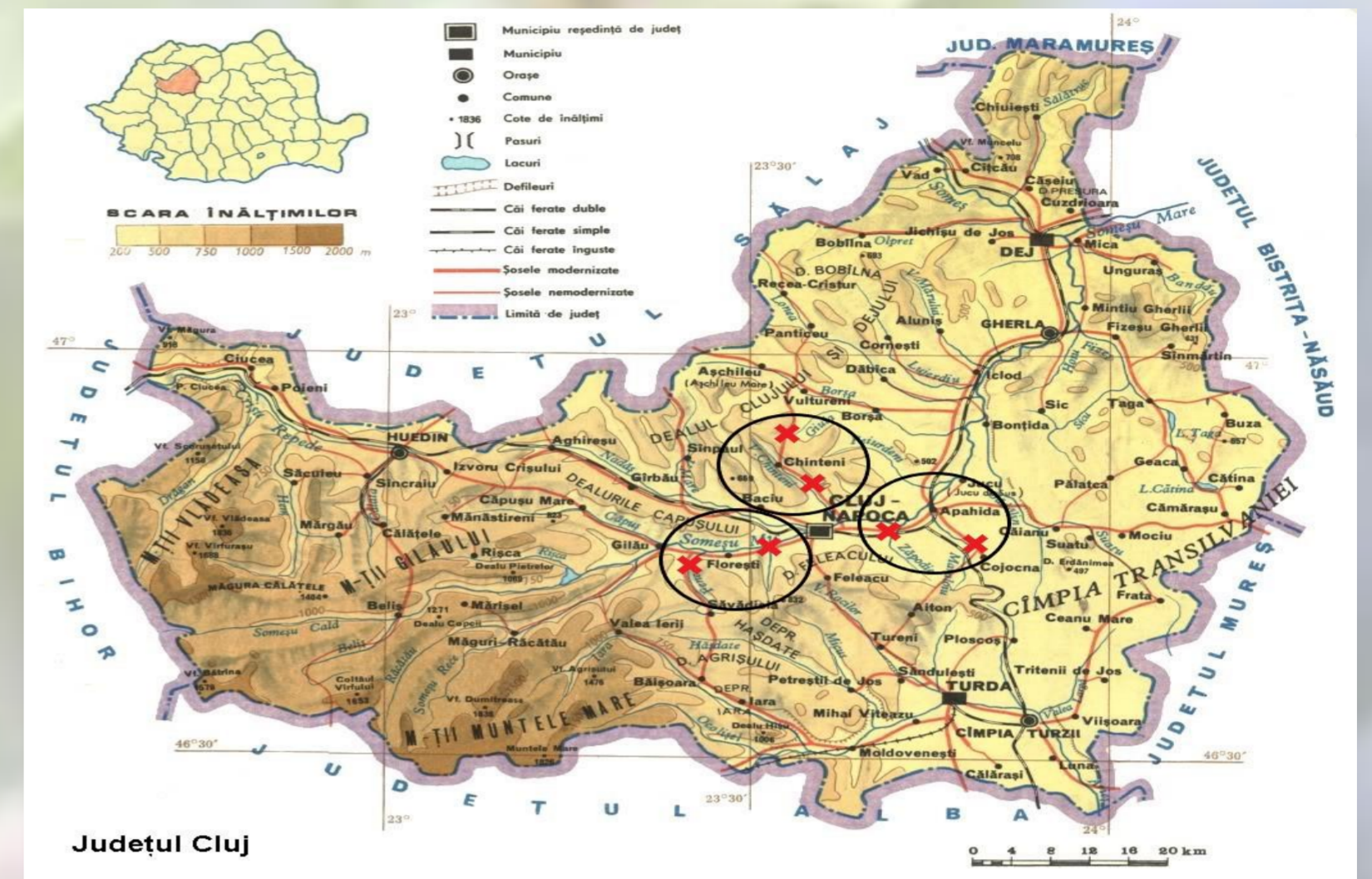


Figure 1. Sampling location

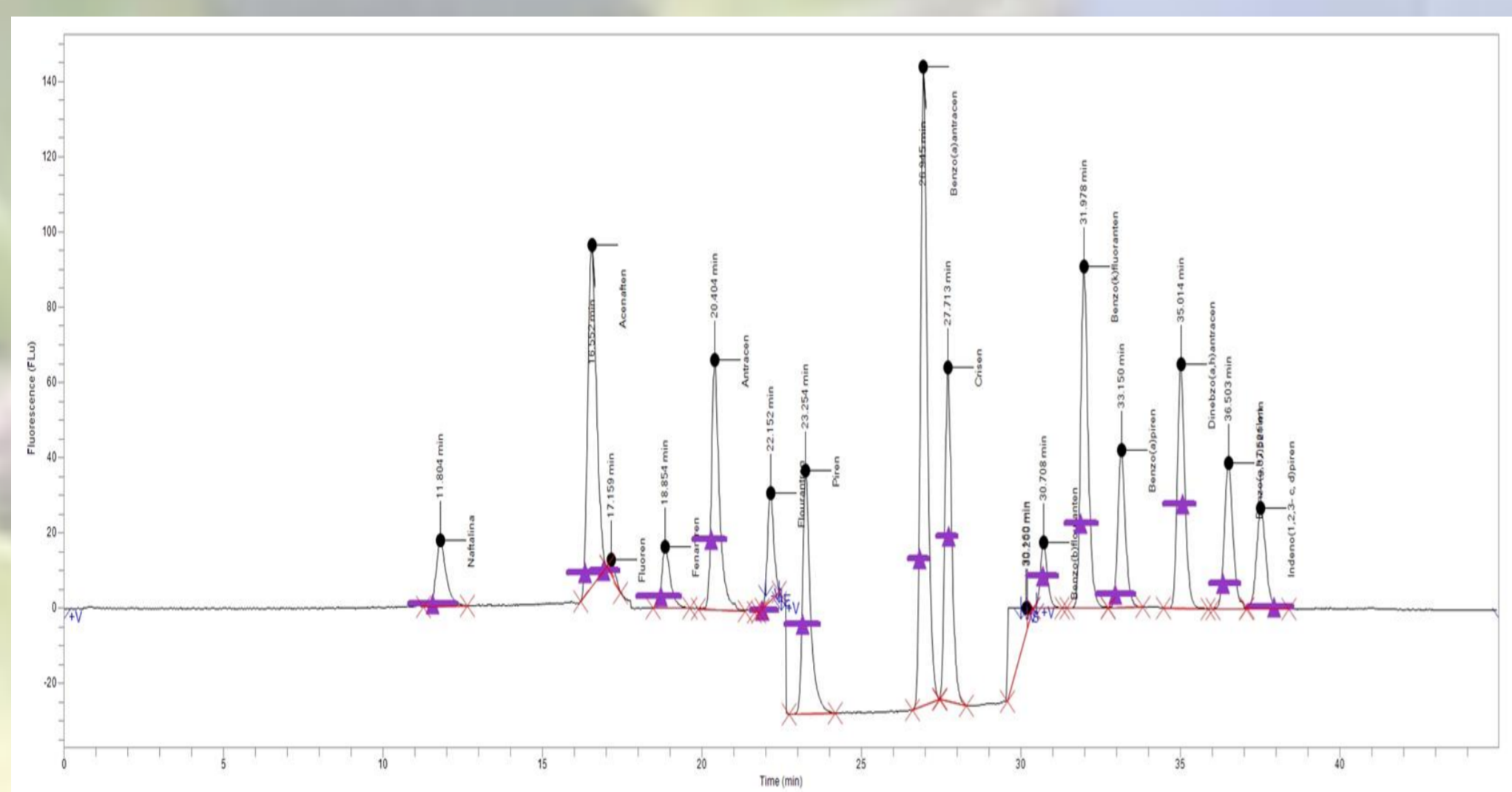


Figure 2. Chromatogram of the standard polycyclic aromatic hydrocarbons

Results and conclusions

The HPLC chromatographic profiles of the fruits that were analyzed differed significantly (figure 3). Phenanthrene, fluorene, naphthalene, pyrene and fluoranthene are the main contaminants of the fruit samples. Phenanthrene is the polycyclic aromatic hydrocarbon found in the highest concentrations in the samples. The highest values of phenanthrene content were determined in Borhanci sampling location 13.4 mg/kg in October 2019 season, in the same sampling season followed by Chinteni location with 12.16 mg/kg. The obtained results are within the legal norms established by law by the European Union through Commission Regulation 835/2011 (Commission Regulation 836/2011).

Acknowledgment

Methodology

The method is based on the use of high-performance liquid chromatography with fluorescence detection for the determination of the 15 polycyclic aromatic hydrocarbons in the samples (figure 2).

10 grams of crude sample and 25 ml of solvent, hexane were sonicated for 60 minutes at 40 °C, after which the emulsion was left for 5 minutes to separate the phases. The extract obtained was filtered through florisil and mineral wool columns and the hexane was completely removed from the filtrate by concentrating the sample at rotavapor and water bath to 0,5 ml. The obtained extract was diluted with a known volume of acetonitrile. The samples to be analyzed are filtered through a microfilter, transferred to an autosampler glass vial and analyzed.

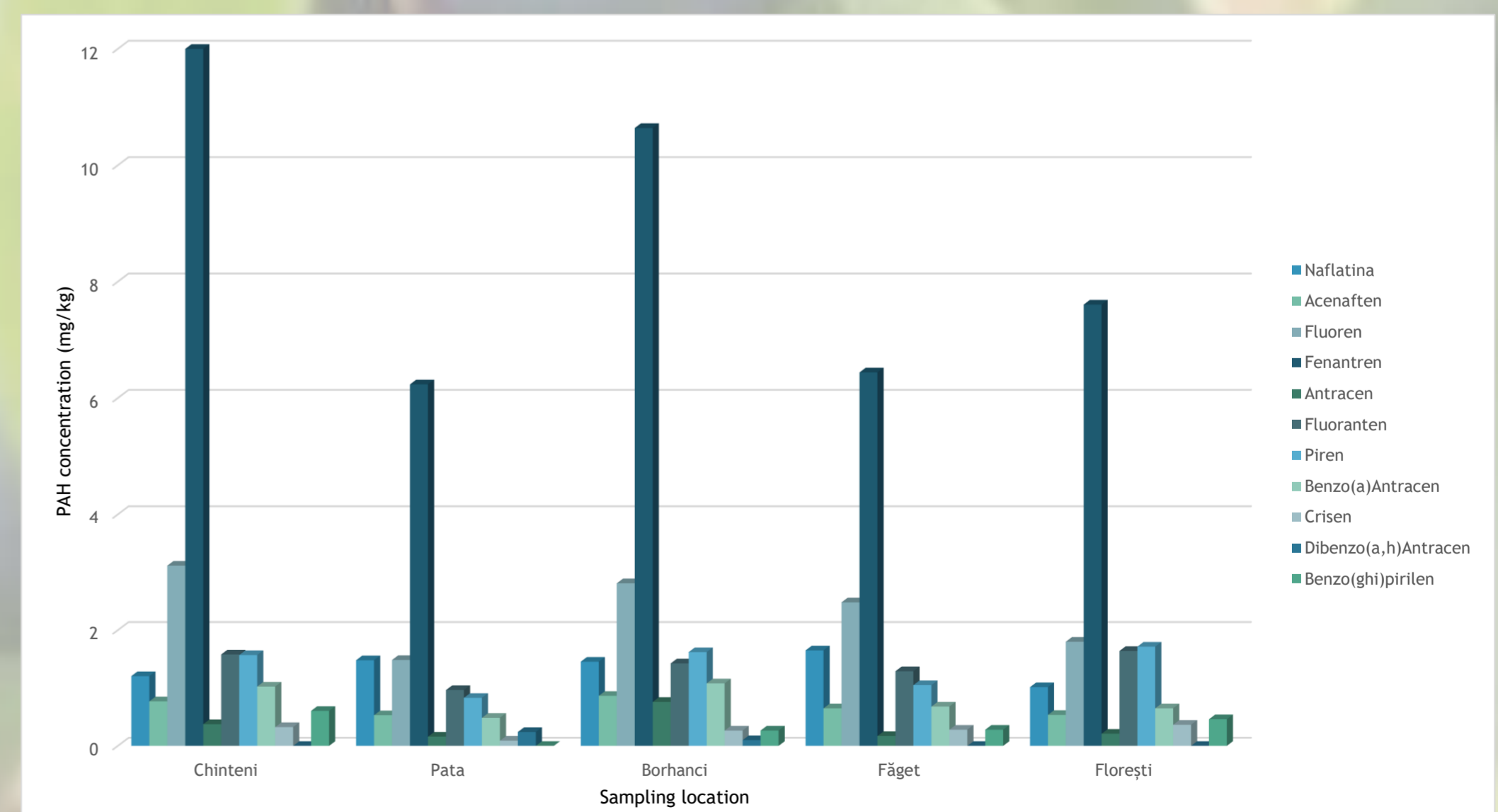


Figure 3. Comparative situation of PAH content in the studied sampling areas