

**Publishable abstract with the progress achieved in execution phase III /2016  
2 SEE/2014 (Ro13-0019)**

**TITLE OF THE PHASE:** Morpho-anatomical comparative analyses, biochemical fingerprinting, chromatography and DNA fingerprinting of some selected medicinal and aromatic plant species and derived products.

The third phase of the project reporting "Molecular authentication of complex herbal food supplements for safety and efficacy" (PhytoAuthent) (contract no. 2SEE / 2014) covered the period 01.01.2016 - 31.12.2016. For this phase of the project, a number of eight activities, that involved all four members of the consortium, were planned and successfully implemented. All objectives and target deliverables of each asset were achieved.

In this third phase of the project, updated scientific data were compiled for the monitoring and evaluation of the way in which the theoretic, practical and technological progress impacts aspects related to the safety of herbal food supplements and ethno-pharmaceutical products.

Plant material was collected from the plant species with ethnopharmaceutical potential taken into study (*Echinacea sp.*, *Hypericum perforatum*, *Gentiana lutea*, *Veratrum album*, *Veronica sp.* si *Dactylorhiza sp.*) both from spontane flora and frm cultivated fields (*Echinacea sp.* si *Gentiana sp.*), with a closer look at the underrepresented species.

Morfo-anatomical analyses were performed with some of the selected medicinal and aromatic plants. Sampling of the raw plant material of the target plant species was conducted for the biochemical and chromatographic fingerprinting, the efficacy of different DNA extraction protocols was evaluated. PCR amplification protocols (for standard and fusion primers) were evaluated and DNA barcoding using Sanger sequencing of the target species and the DNA metabarcoding using high throughput sequencing of the herbal products was initiated. Various pharmaceutical forms of marketed plant products were selected, purchased from several vendors and tested preliminary.

Also, training of young researchers (MSc and PhD students) and the results dissemination activities were conducted.