Gembloux Agro-Bio Tech, University of Liège, Belgium

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Chemical analyses of the seeds from *Prunella vulgaris*: A chemotaxonomic approach

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Introduction

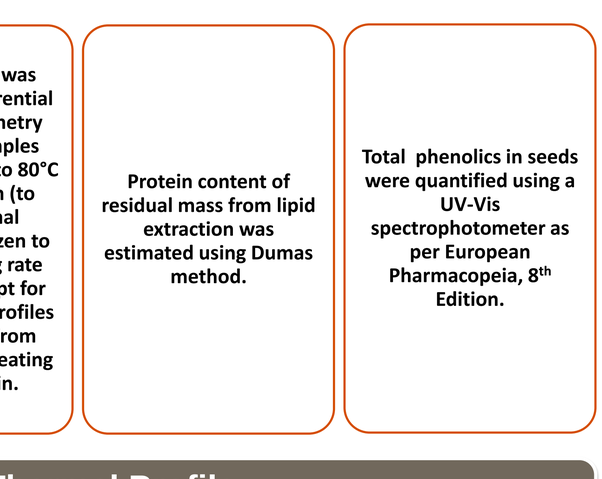
Enhance Biodiversity

Valuable Compounds

Ruminant Nutrition

- Prunella vulgaris (common self-heal) are traditionally grown along field borders to enhance biodiversity and as aid in ruminant nutrition.
- Besides this, they can also be a source of several compounds commercially important for food and pharmaceutical industries.
- Seeds are usually store house of lipids in a plant and they also contain some other interesting compounds.

Objectives



Lipid Extraction

Differential Scanning Calorimetry

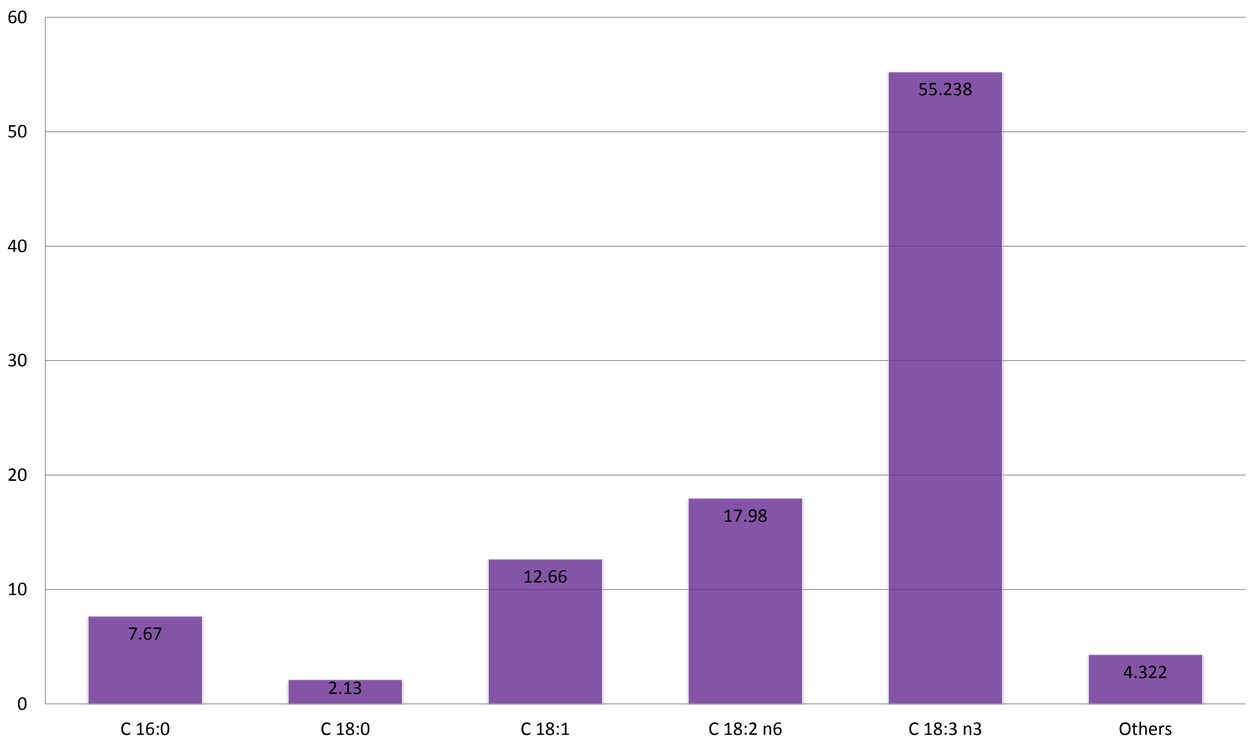
Material and Methods

Material	Methods					
Prunella vulgaris seeds were procured from local supplier.	Seeds were grinded in a mill before experiments.	Lipid extraction from seeds was done using 2:1 chloroform to methanol as solvent.	Fatty acid profile was determined by Gas Chromatography on a HP 6890 series GC system apparatus fitted with a HP 7683 series injector and Flame Ionization Detector.	Thermal profile was analyzed by Differential Scanning Calorimetry Q1000 DSC. Samples were first heated to 80°C & held for 5 min (to remove thermal history), then frozen to –80°C at (cooling rate –10°C/min) & kept for 10 min. Melting profiles were recorded from -80°C to 70°C at heating rate of 5°C/min.	Protein content of residual mass from lipid extraction was estimated using Dumas method.	Total phenolics in seeds were quantified using a UV-Vis spectrophotometer as per European Pharmacopeia, 8th Edition.

Results and Discussion

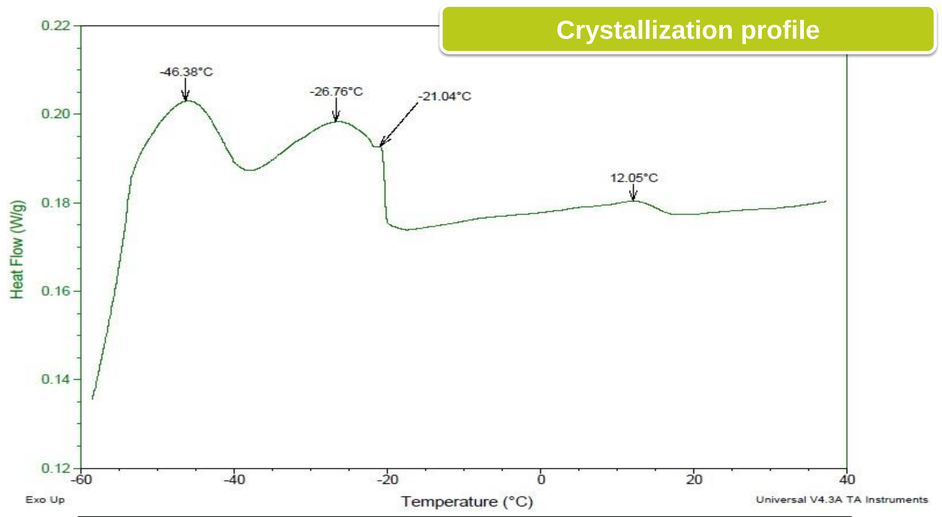
S. NO.	Experiment	Result
1	**Lipid Content** (raw material)	14.845 ± 0.120 %
2	**Protein Content** (residue left after lipid extraction)	12.747 ± 0.659 %
3	**Total Phenolic Content** (raw material)	0.710 ± 0.002 %

% Fatty Acid Composition



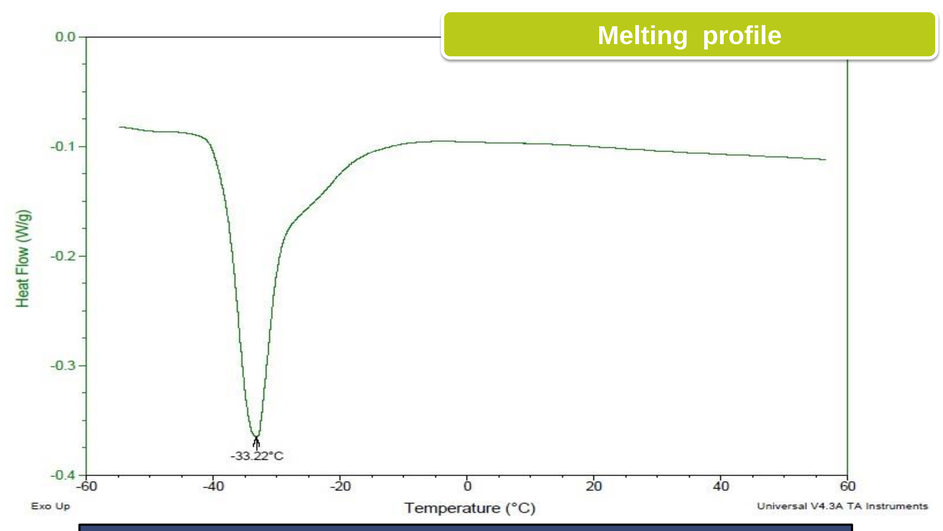
Thermal Profile (Differential Scanning Calorimetry)

Crystallization profile



Crystallization profile shows three exothermic peaks at -46.38 °C, -26.76°C & -21.04°C and a shoulder at 12.05°C.

Melting profile



Melting profile shows one big endothermic peak at -33.22°C.

Conclusion

1. Oil extraction from the seeds of Prunella vulgaris was done on wet weight, which came out to be 14.845 ± 0.120 % and the protein content of the residual mass was estimated which came to be 12.747 ± 0.659 %.
2. The seeds of Prunella vulgaris are good source of C 18: 3 n3 (alpha- linolenic acid) and C 18: 2 n6 (linoleic acid).
3. Total phenolics content of the seeds came out to be 0.710 ± 0.002%.
4. With this amount of lipids, fatty acid profile, thermal profile of lipids, protein content in residual mass and the total phenolics they could be interesting component for food and pharmaceutical industry.

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Project 4B- **Field border flowering strips as a source of food or non-food compounds**