

Tannin extraction from spruce bark



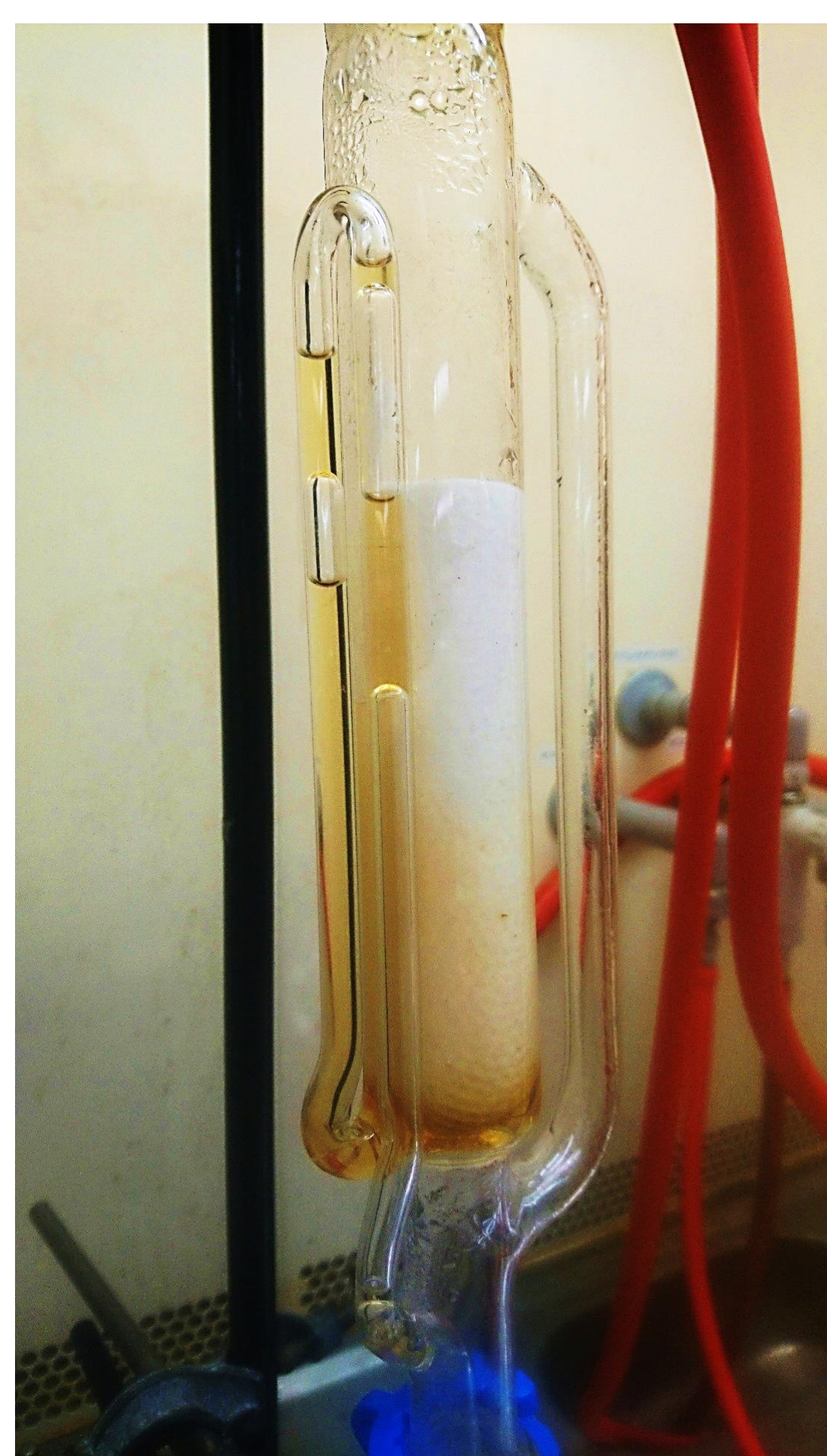
Green chemistry compounds from sawmill by-product

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The purpose for the development project was to clarify the potential of tannins extracted from spruce bark. 1 tonne of dry spruce bark can be processed into 130kg of tannin powder, valued between 1-2€/kg.

The result of this project is a summary of my additional studies of wood products and properties, interviews and visits, literature research and laboratory work. The original idea of the project was discussed with prof. Reijo Lappalainen

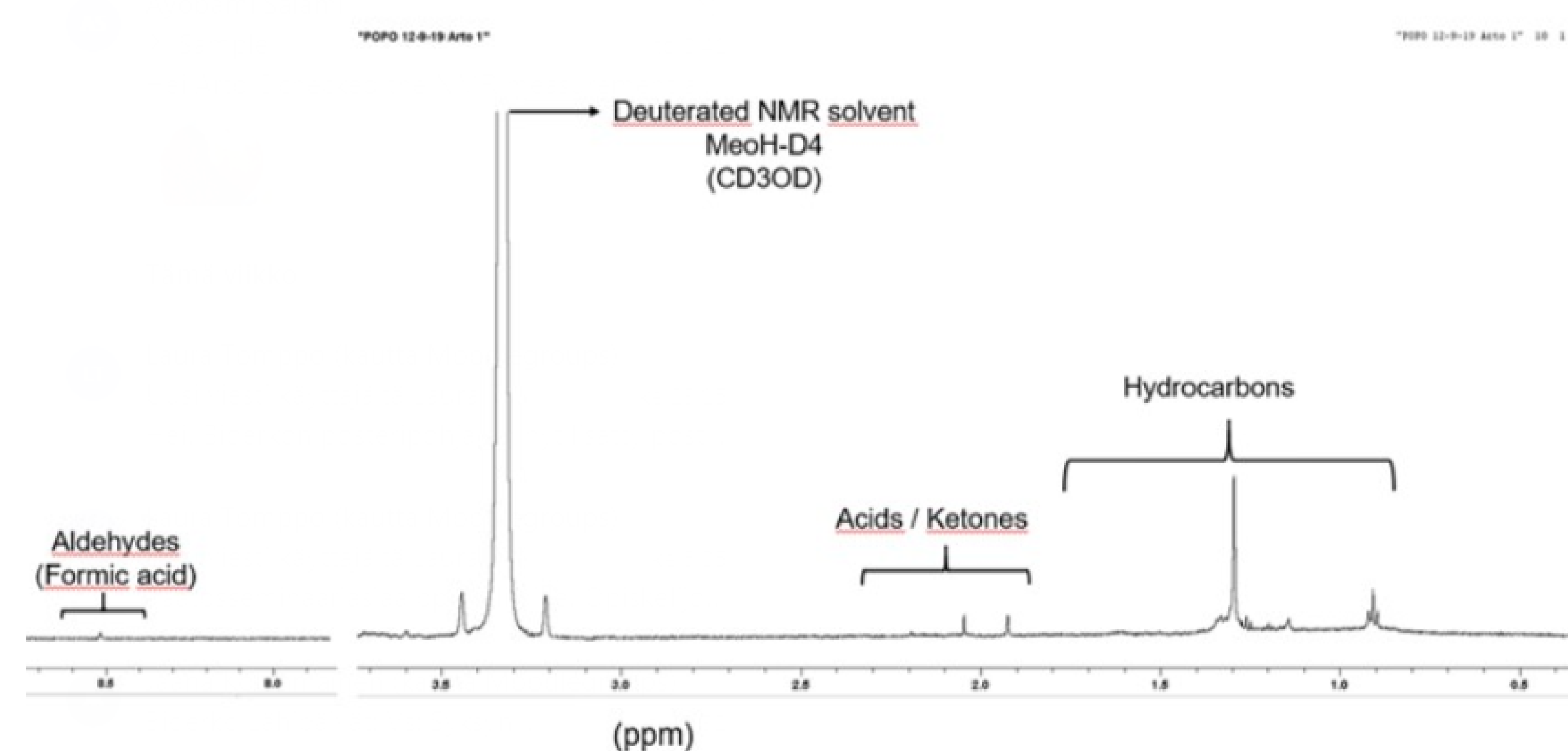


Soxhlet extraction

During the laboratory work the tannins were extracted and the liquids were analyzed with NMR and Orbitrap ms/ms spectrum.

Tannins are highly soluble to water, therefore hot and cold water were used as the main solvent.

For the warm water bath the Soxhlet extractor was used to separate the soluble compounds from the matrix.



NMR analyze for the extract

Tannins are versatile and reactive compounds with valuable properties for different types of applications from nutrition to pharmacy products. Natural phenolic compounds can be used to replace synthetic phenols in several applications like foam insulations and gluing systems in wood working industry.

Worldwide demand for green chemistry compounds is growing. Spruce bark is a potential source for tannin extraction, but the bark liquids contains much more impurities than what is found with the present and commonly used raw materials. Further studies of the commercial scale production set up and purification systems are needed.

