



Characterization methods for tannins

Leif Hed, Centria University of Applied Sciences

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TURUN YLIOPISTON JULKAISUJA ANNALES UNIVERSITATIS TURKUENSIS

SARJA - SER. A / OSA - TOM. 477

ASTRONOMICA - CHEMICA - PHYSICA - MATHEMATICA

PHENOLICS OF THE INNER BARK OF SILVER BIRCH: CHARACTERIZATION AND INTRASPECIFIC VARIATION

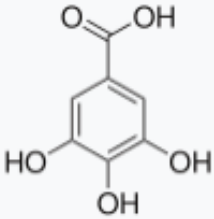
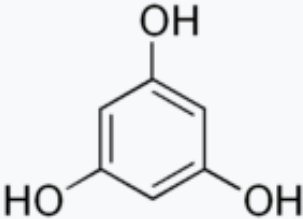
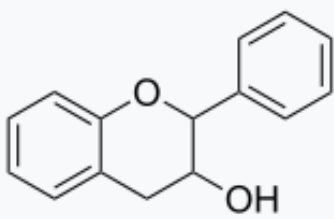
Jaana Liimatainen

TURUN YLIOPISTO
UNIVERSITY OF TURKU Turku 2013

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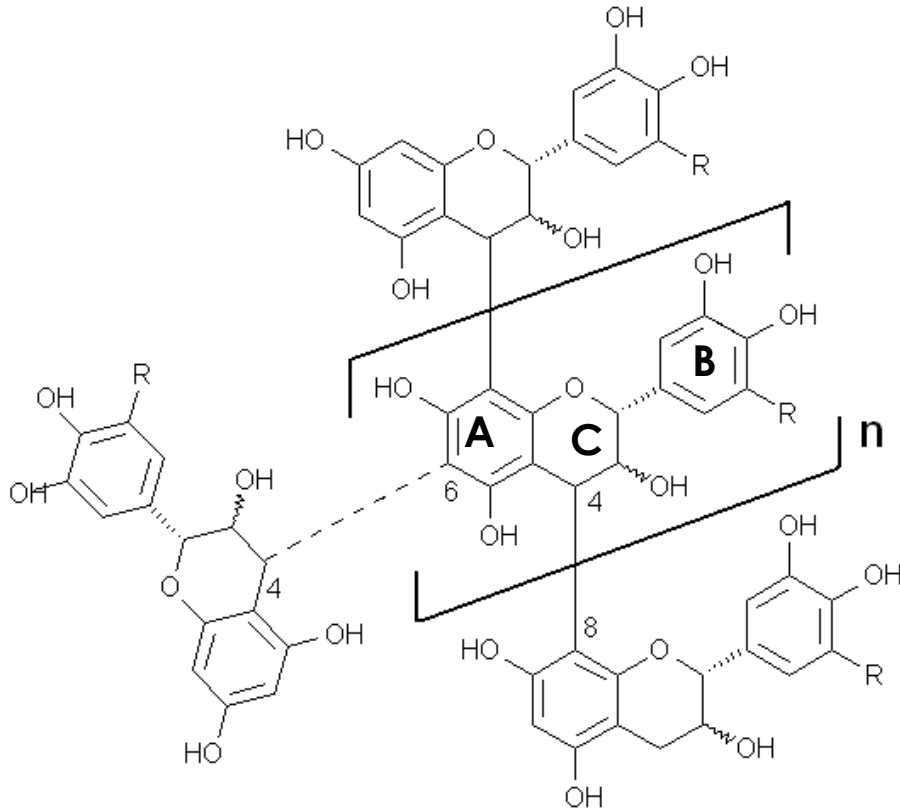
Structure of different tannins

Base unit / scaffold	 Gallic acid	 Phloroglucinol	 Flavan-3-ol	
Polymer class	Hydrolyzable tannins	Phlorotannins	Condensed tannins ^[5]	Phlobatannins (C-ring isomerized condensed tannins) ^[5]
Sources	Plants	Brown algae	Plants	Tree heartwood



A1.3

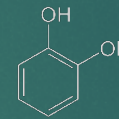
Possible pyrolysis-GC-MS approach to tannin determination



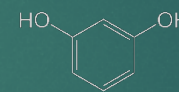
Condensed tannins

Pyrolysis products

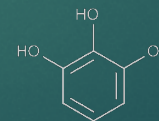
- B-ring => Catechol



- A-ring => Resorcinol



- B-ring => Pyrogallol



Characterisation of industrial barks for their tannin contents for further green-wood based adhesives applications

F. BERTAUD, S. TAPIN-LINGUA, A. PIZZI, P. NAVARRETE, M. PETIT-CONIL

Pyrolysis-GC-MS

Powerful tool for polymer characterization

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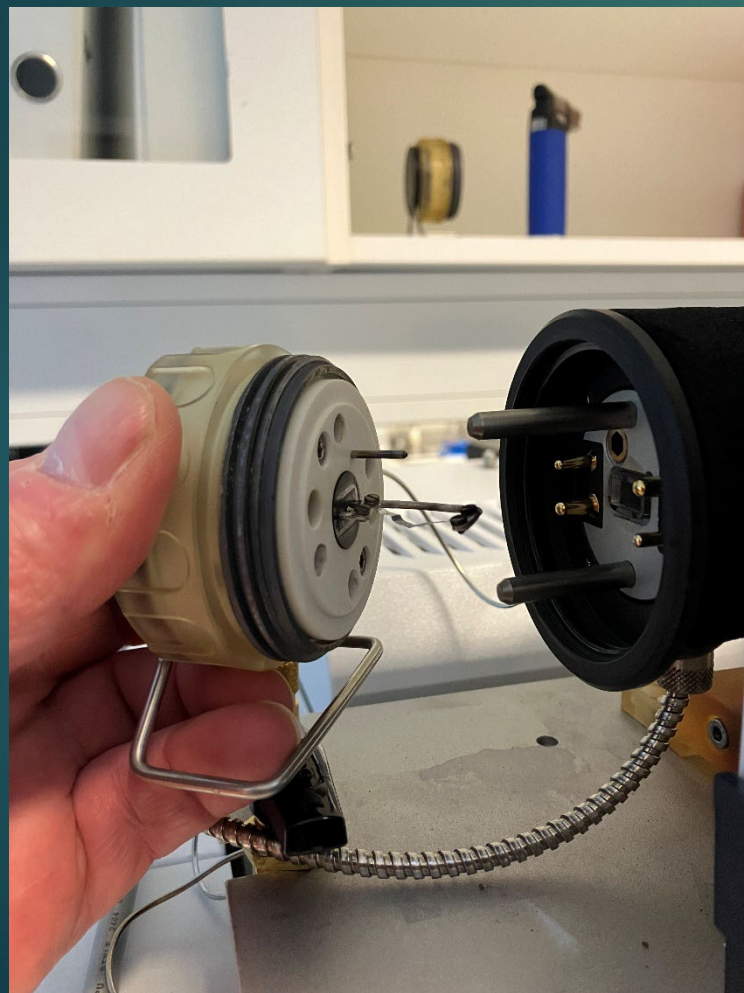


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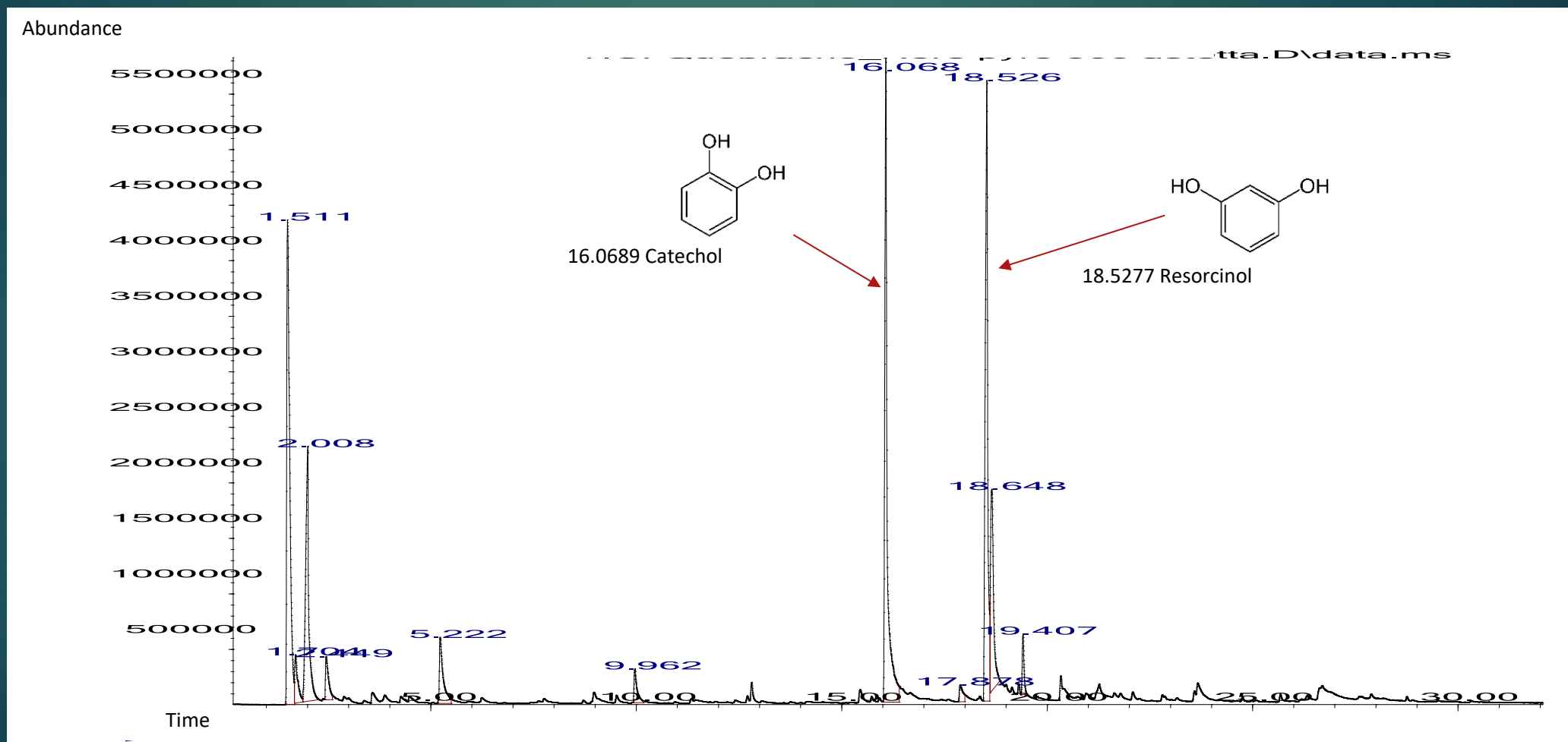


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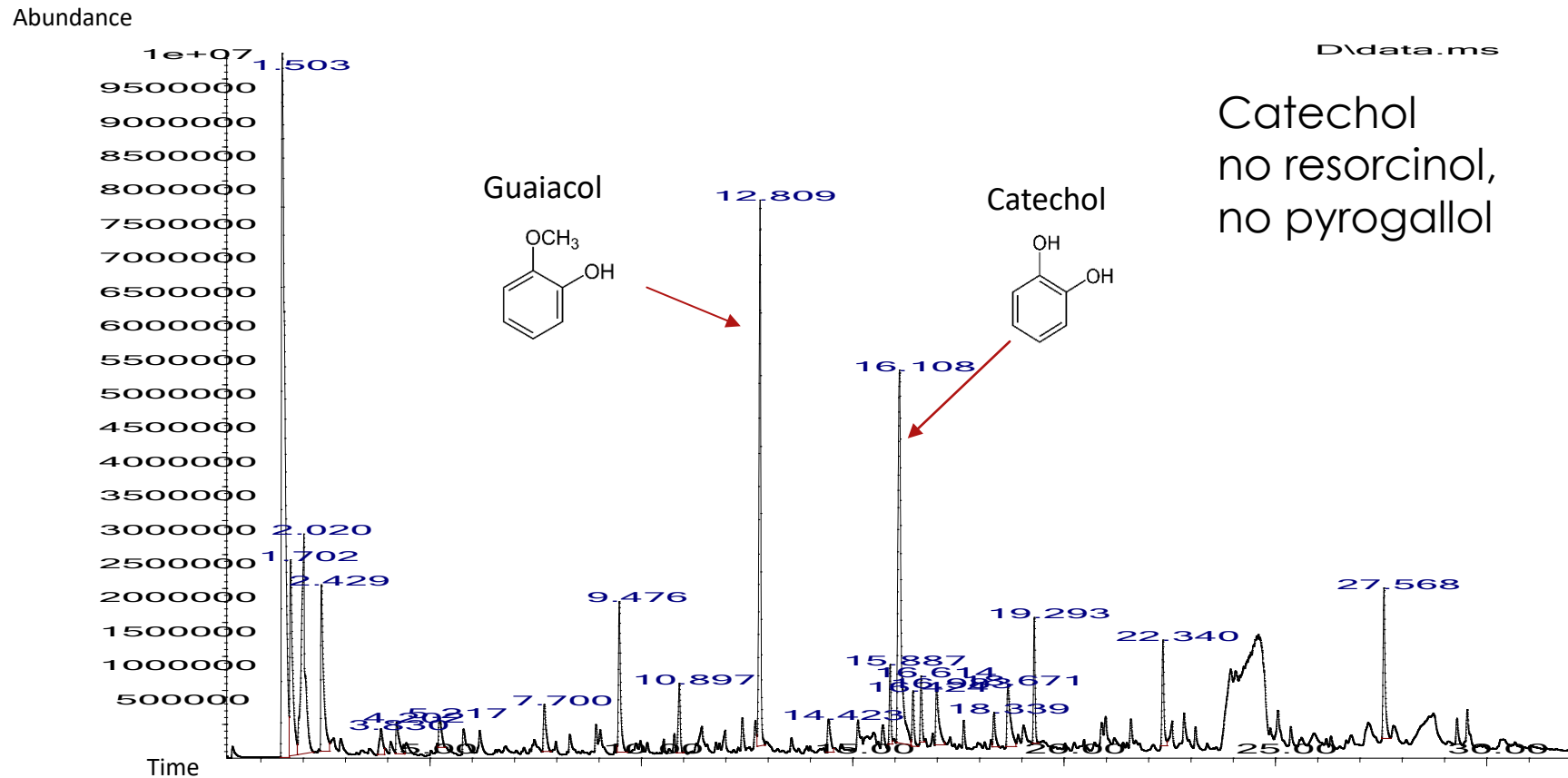
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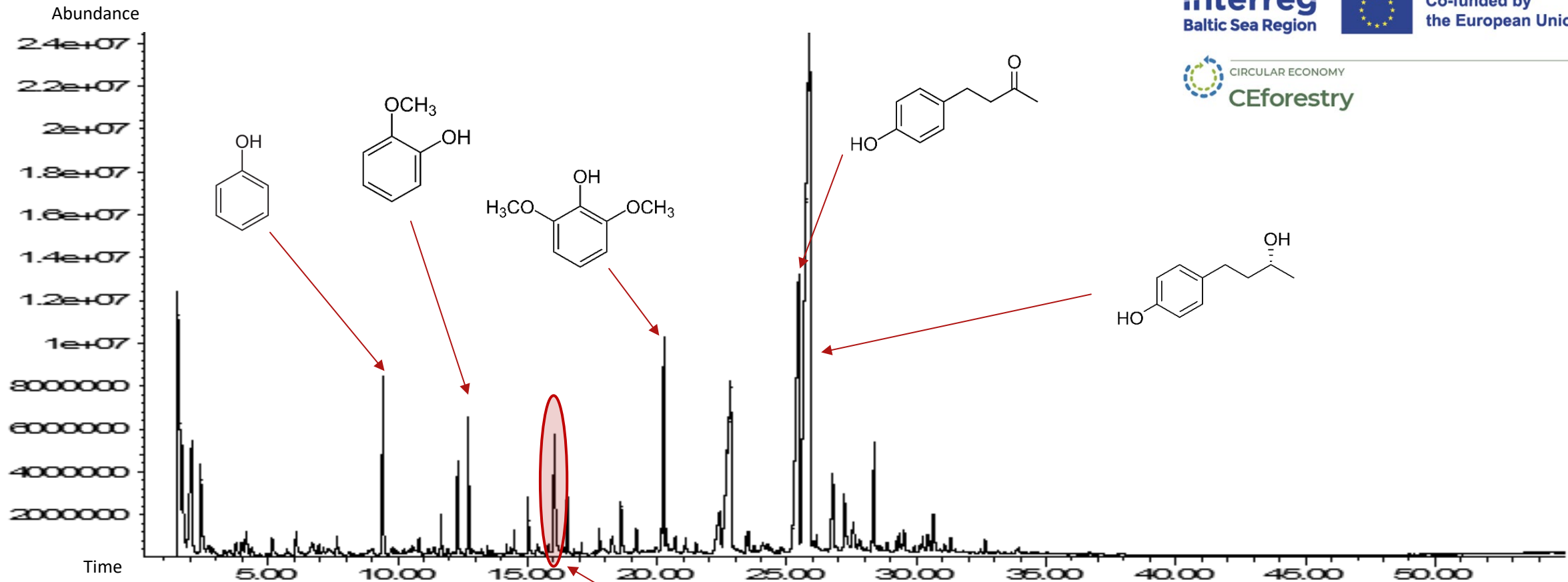


Quebracho

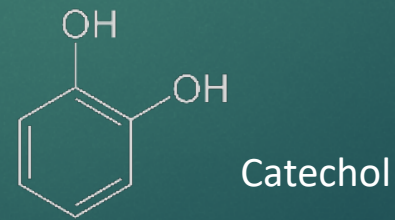


Spruce bark



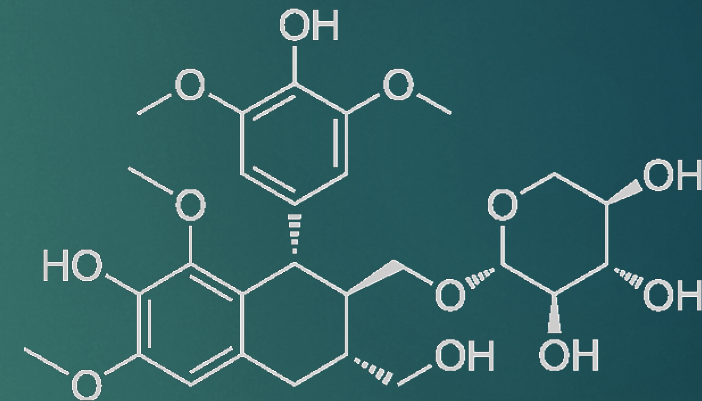


BIRCH INNER BARK EXTRACT
 - Catechol appears,
 - No resorcinol, no pyrogallol
 => still a tanning agent



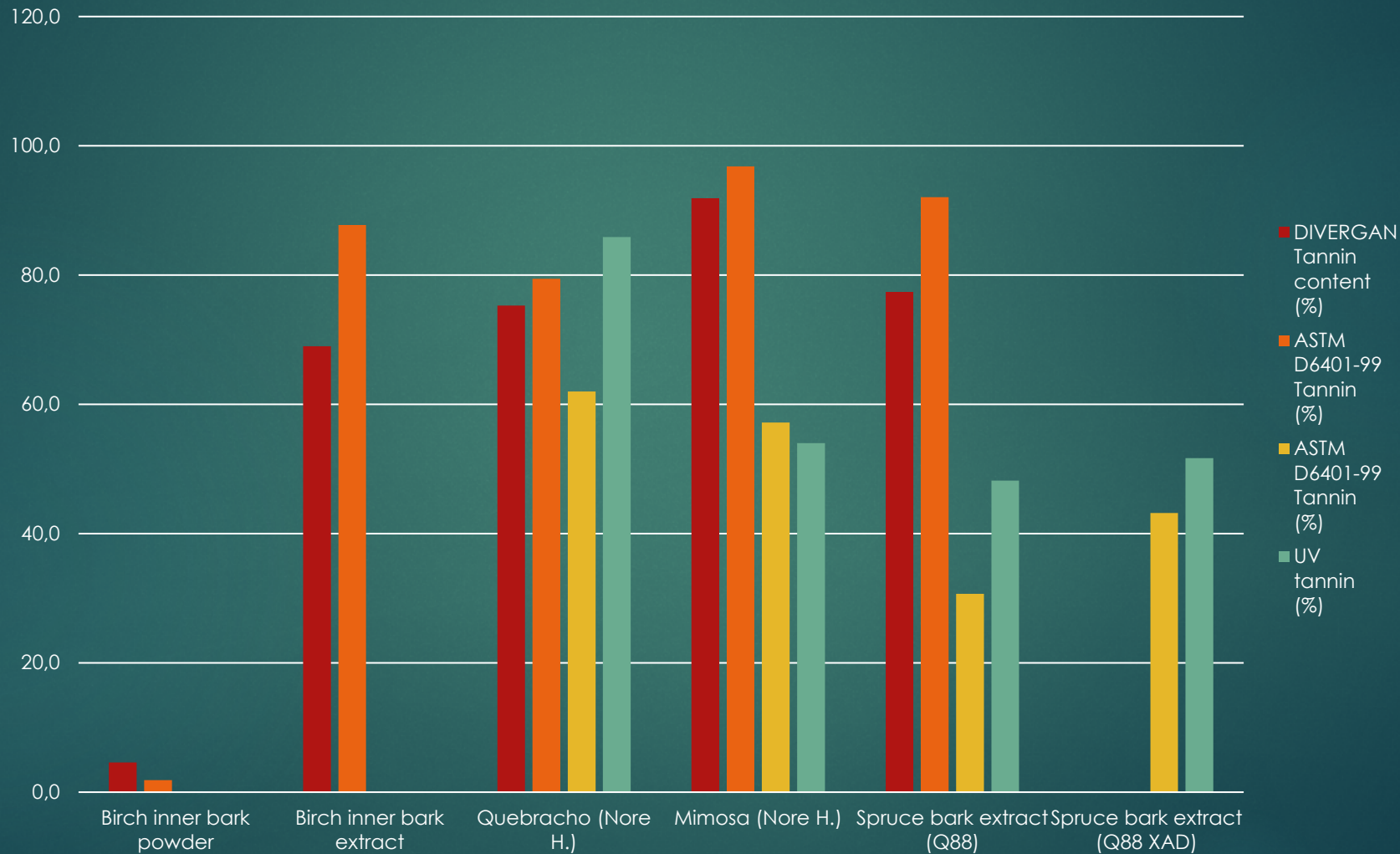
Characterization methods for tannins

- ▶ Lyoniside is a lignan glycoside with antioxidant, allelopathic and [antifungal](#) activities, which can be isolated from the rhizomes and stems of bilberry (*Vaccinium myrtillus* L.).
- ▶ Lyoniside exhibits radical scavenging properties with an IC_{50} value of 23 $\mu\text{g/mL}$ in DPPH assay.
- ▶ Lyoniside inhibits the mycelial growth of *Fusarium oxysporum* and *Mucor hiemalis* at 50 $\mu\text{g/mL}$ with inhibitory rates of 78% and 80%, respectively.



Lyoniside

Comparison of tannin content (Centria and Luke)





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TESTING OF DOMESTIC (FINLAND) TANNIN POWDERS FOR LEATHER TANNING

OCTOBER 2024

HANNA NORE

PERINNENAHKURIMESTARI, KEMIÖNSAARI

PICTURE: HANNA NORE



Thank you

Time for a question