Extraction, Purification, and Characterization of Polysaccharides from Pinot noir Grape

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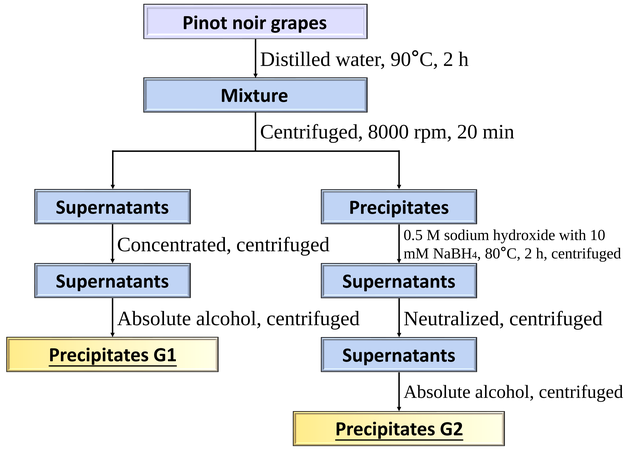
Introduction

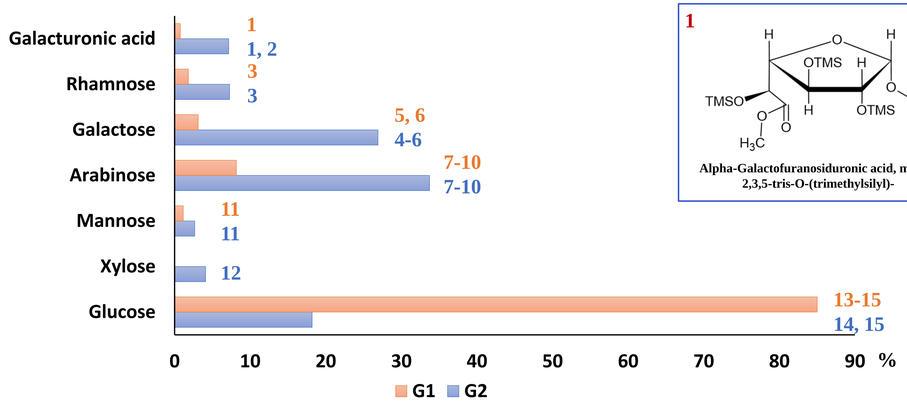
- Wine mouthfeel is an important quality attribute of red wine. It is postulated that polysaccharides from grapes and yeasts could play an important role in wine mouthfeel.
- Understanding the structural characterization of polysaccharides from different sources is extremely important for wine organoleptic quality.

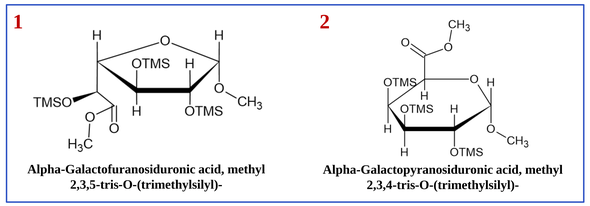
Grape Polysaccharides Extraction and Preliminary Purification

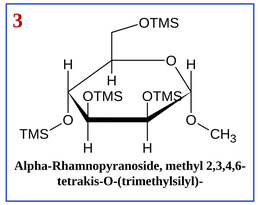
- Hot water extraction method and alkaline extraction method were used to extract two grape polysaccharides.
- The obtained grape polysaccharides fractions were further washed by absolute alcohol for three times.

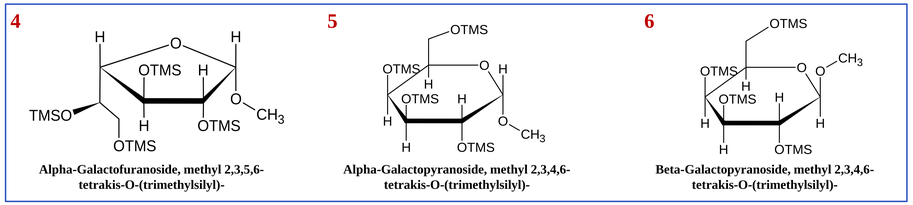


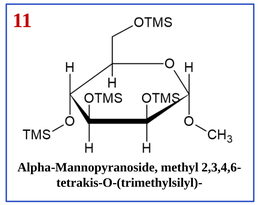
Results

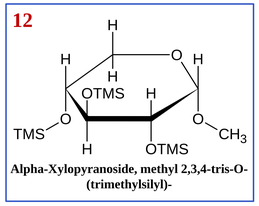


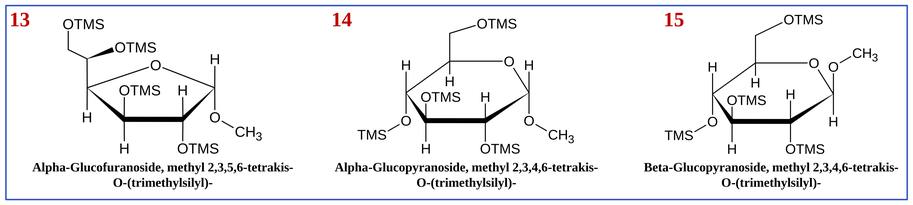


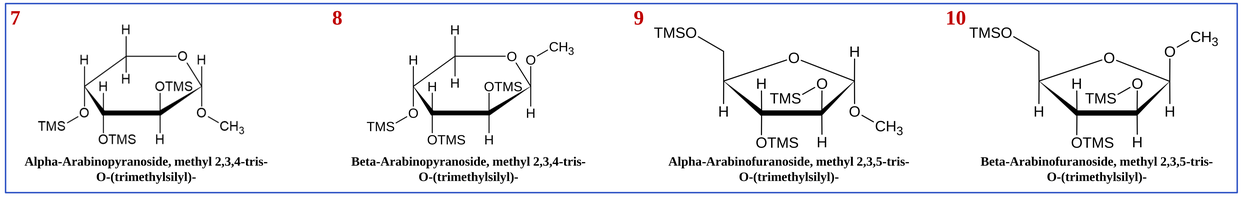












Grape Polysaccharides Analysis

Sugar standards:

- Glucose, xylose, mannose, arabinose, galactose, rhamnose, fucose, glucuronic acid and galacturonic acid were used as sugar standards.

Analytical method:

Methanolysis
0.5 mL 0.5 M HCl/methanol at 85°C for 18 h

Internal standard
0.2 mL 0.1 mg/mL myo-inositol/pyridine

Evaporation
Dried under a stream of nitrogen

Silylation
0.1 mL 1-(trimethylsilyl)imidazole at 80°C for 30 min

GC-MS
HP5MS (30 m, 250 µm, 0.25 µm), Inlet temperature: 270°C; Hydrogen flow: 1.5 mL/min; Split ratio: 10:1; The oven program: 130°C for 2 min; with 2°C/min to 200°C; with 20°C/min to 280 °C, hold for 7 min

Conclusions

- Arabinose, galactose, glucose, rhamnose, galacturonic acid, xylose, and mannose were the major sugars identified in grape polysaccharides.
- G1 was composed mainly of glucose (85%) and arabinose (8%).
- G2 was composed primarily of arabinose (34%), galactose (27%) and glucose (18%).

Thanks to…

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