Measurement of Molecular Mass of Lignin by GPC with Aqueous Solution

Lignin is a macromolecular phenolic compound, forming a major component in wood along with cellulose and hemicellulose and is abundant in nature. Recently, as part of the interest in the use of biomass materials, lignin has been studied for use as a raw material in adhesives, synthetic resins, and organic solvents (dimethylsulfoxide, dimethylsulfide, etc.).

A method for measuring the molecular mass of lignin by SEC using a DMSO/DMF mixed solvent with an added acid has been reported. Here, molecular mass was measured in an aqueous SEC system under simple eluent conditions. An alkaline solution with added acetonitrile was used as the eluent to optimize conditions from the perspective of lignin solubility and interactions with the column packing material.

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Figure 1. Chromatogram of Lignin

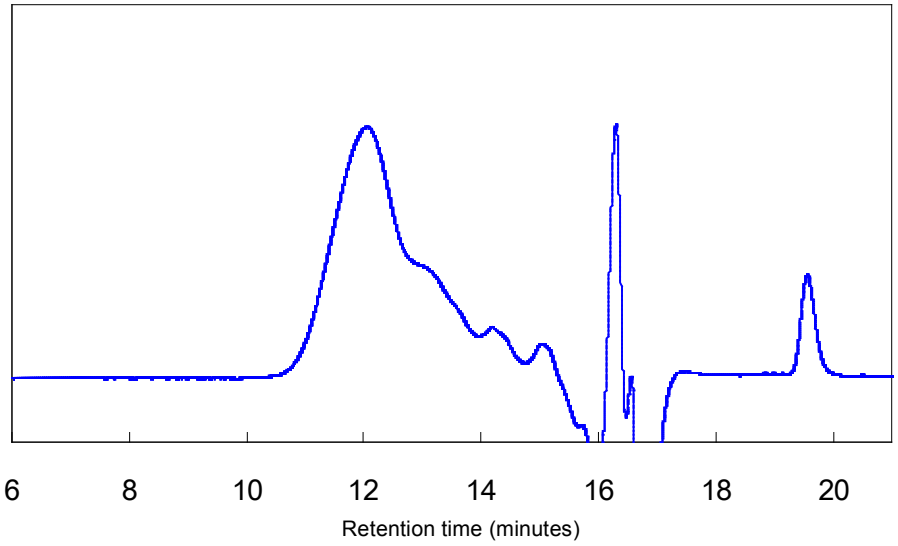

Table1. Analytical conditions

Column:	**TSKgel G3000PW$_{XL}$ + G2500PW$_{XL}$, 7.8mm ID x 30cm**
Mobile phase:	30mmol/L Na_2CO_3 + 10mmol/L $NaHCO_3$, pH 10.7/ CH_3, CN = 60/40
Flow rate:	1.0mL/min
Temperature:	40℃
Injection vol.:	100µL
Detection:	RI