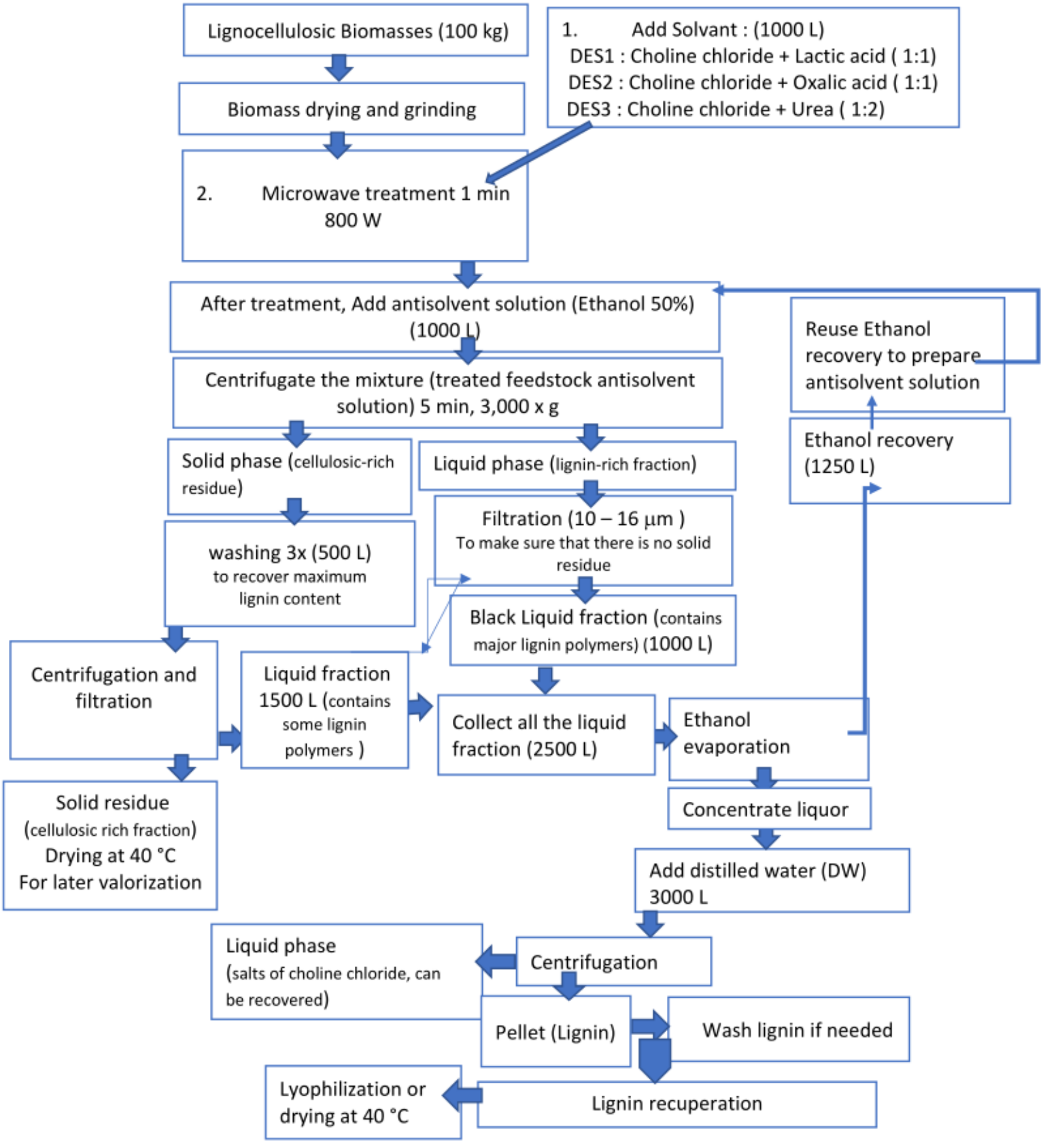
Lignocellulosic Biomasses (100 kg)
Biomass drying and grinding
1. Add Solvant : (1000 L)
DES1 : Choline chloride + Lactic acid (1:1)
DES2 : Choline chloride + Oxalic acid (1:1)
DES3 : Choline chloride + Urea (1:2)
2. Microwave treatment 1 min 800 W
After treatment, Add antisolvent solution (Ethanol 50%) (1000 L)
Reuse Ethanol recovery to prepare antisolvent solution
Centrifugate the mixture (treated feedstock antisolvent solution) 5 min, 3,000 x g
Ethanol recovery (1250 L)
Solid phase (cellulosic-rich residue)
Liquid phase (lignin-rich fraction)
Filtration (10 – 16 µm)
To make sure that there is no solid residue
washing 3x (500 L)
to recover maximum lignin content
Black Liquid fraction (contains major lignin polymers) (1000 L)
Centrifugation and filtration
Liquid fraction 1500 L (contains some lignin polymers)
Collect all the liquid fraction (2500 L)
Ethanol evaporation
Solid residue
(cellulosic rich fraction)
Drying at 40 °C
For later valorization
Concentrate liquor
Add distilled water (DW) 3000 L
Liquid phase
(salts of choline chloride, can be recovered)
Centrifugation
Pellet (Lignin)
Wash lignin if needed
Lyophilization or drying at 40 °C
Lignin recuperation