Smith degradation protocol

(1) Oxidize 20g of Gum Arabic in 2000 ml of 0.1 M periodate (40 g) at 4°C in the dark for 7 days

(2) Terminate the reaction by addition of 10 ml of ethylene glycol, and neutralize with 5 N NaOH to pH 7.0

(3) Condense by evaporator, and then dialyze against water at 4°C for 2 days

(4) Add 10 g of NaBH₄, and keep at room temperature over night

(5) Neutralize with 6 N acetic acid to pH 7.0, condense by evaporator (to app. 300 ml), then dialyze against water for 2 days

(6) Add 100 ml of 4 N TFA (1/3 volume of sample, final 1 N) to hydrolyze at room temperature over night

(7) Centrifuge at 9000 rpm, 10 min to remove insoluble compound

(8) Precipitate the galactan by addition of 800 ml of ethanol (2 volume of sample), and collect the precipitate by centrifugation at 9000 rpm, 10 min

(9) Wash with 70% ethanol (800 ml), then ethanol (800 ml) (in each wash, supernatant after centrifugation at 9000 rpm for 10 min should be removed)

(10) Wash with acetone (800 ml), then petrol ether (800 ml) by suction filtration

(11) Lyophilize in desiccator, about 7.4 g beta-galactan will be obtained. To get beta-1,3-galactan, at least thrice Smith degradation will be necessary.

References
