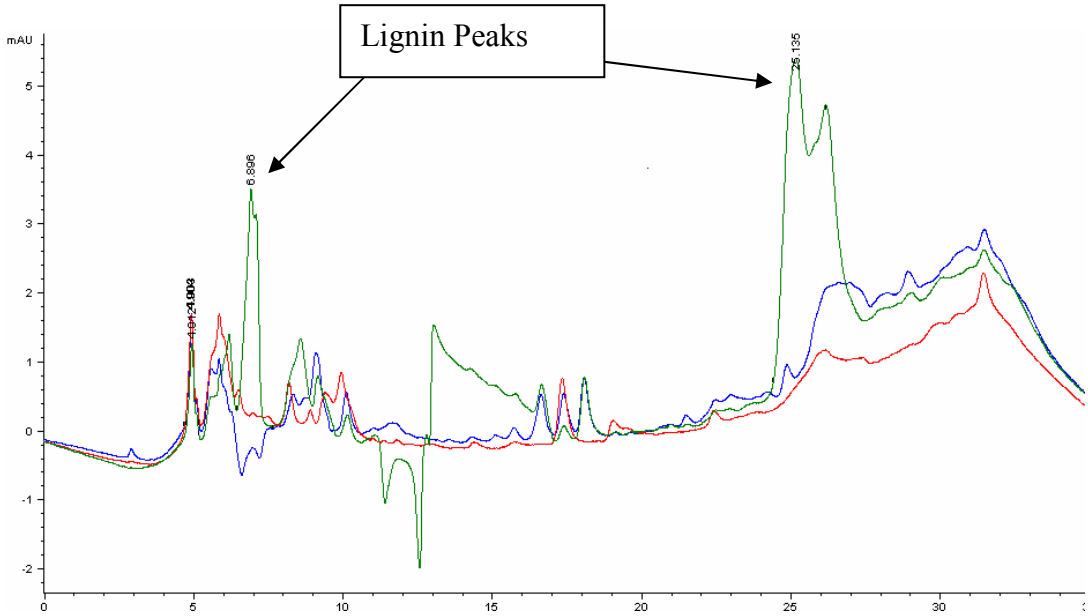

Fig. S1 *P.Putida* with lignin in LB after 1 day (blue), compared with lignin in LB after 1 day (green) and bacteria growing in LB after 1 day (red). Note disappearance of lignin peaks between green and blue line.

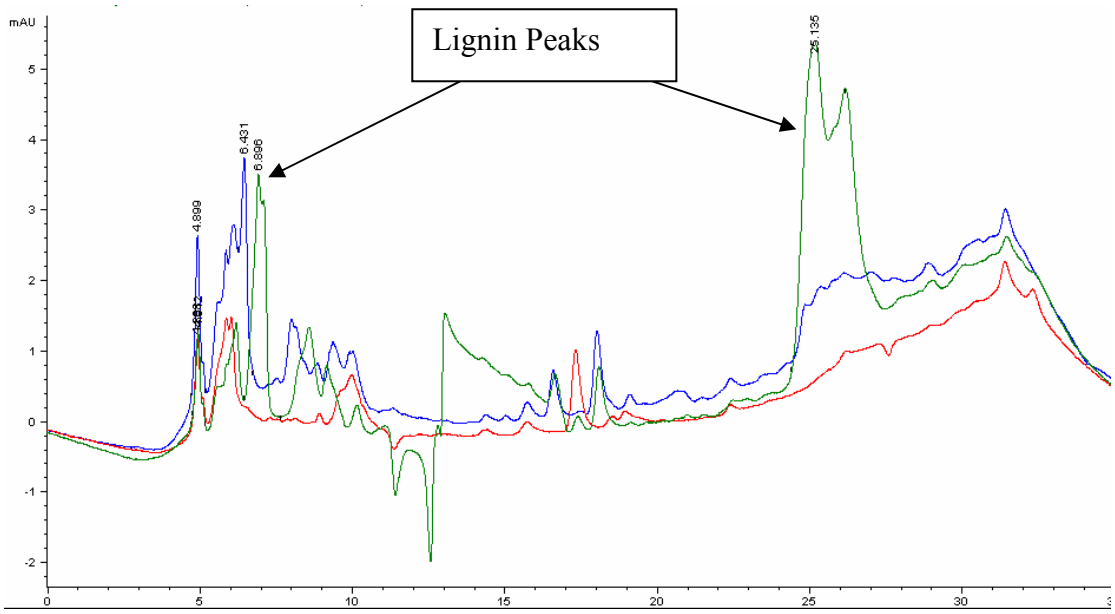

Fig. S2 RHA1 with lignin in LB after 1 day (blue), compared with lignin in LB after 1 day (green) and bacteria growing in LB after 1 day (red). Note the disappearance of the lignin lignin peaks from the green to the blue line.

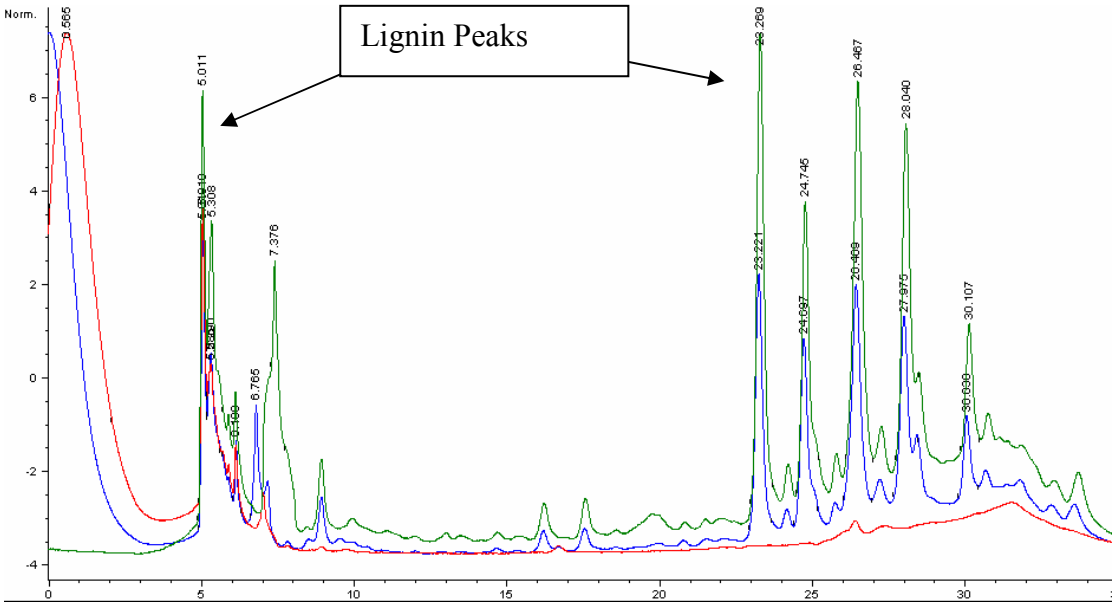

Fig. S3 *B. Subtillis* with lignin in LB after 1 day (blue), compared with lignin in LB after 1 day (green) and bacteria growing in LB after 1 day (red). Note lignin peaks remain.

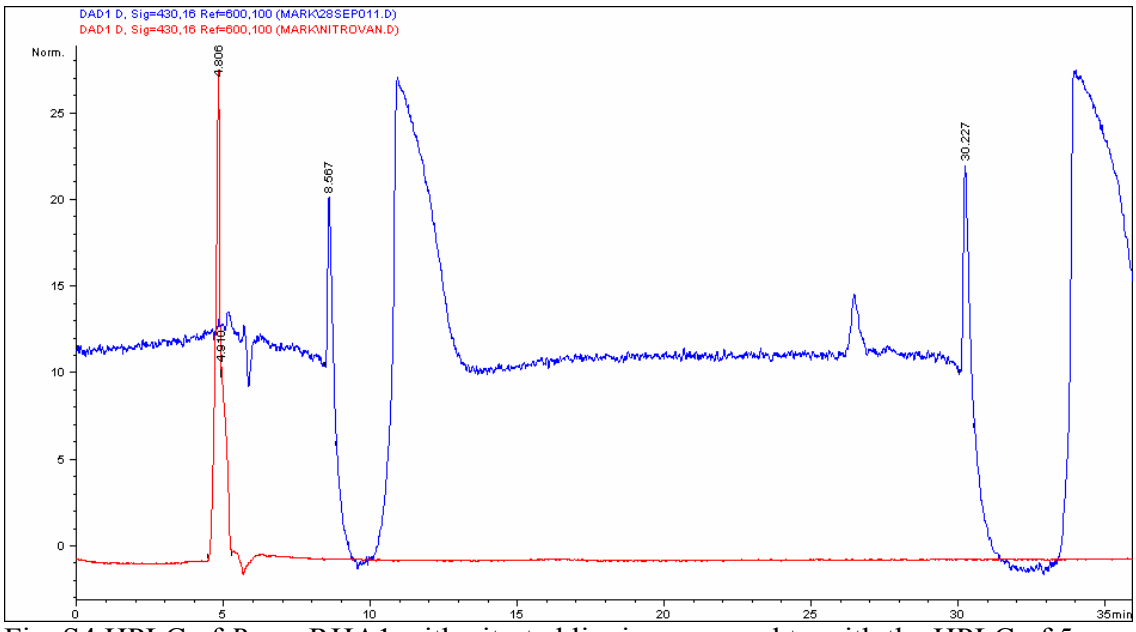

Fig. S4 HPLC of *R. sp*. RHA1 with nitrated lignin compared to with the HPLC of 5-nitrovanillyl alcohol

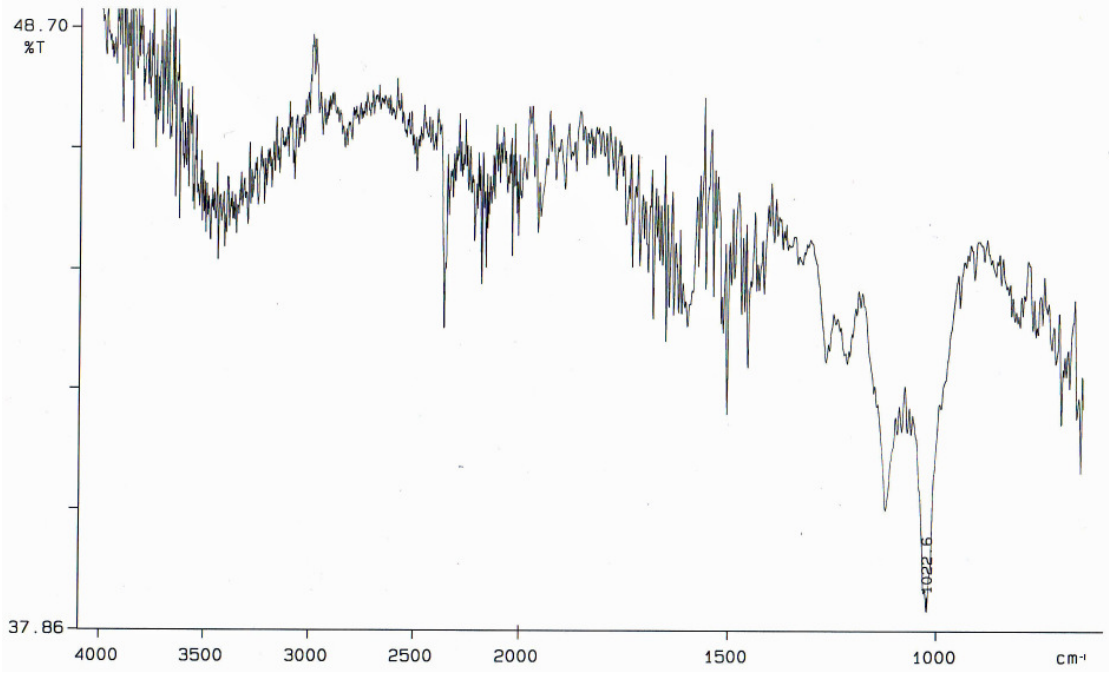

Fig. 5S IR of lignin from miscanthus. The broader ether peak is typical of a grass lignin.

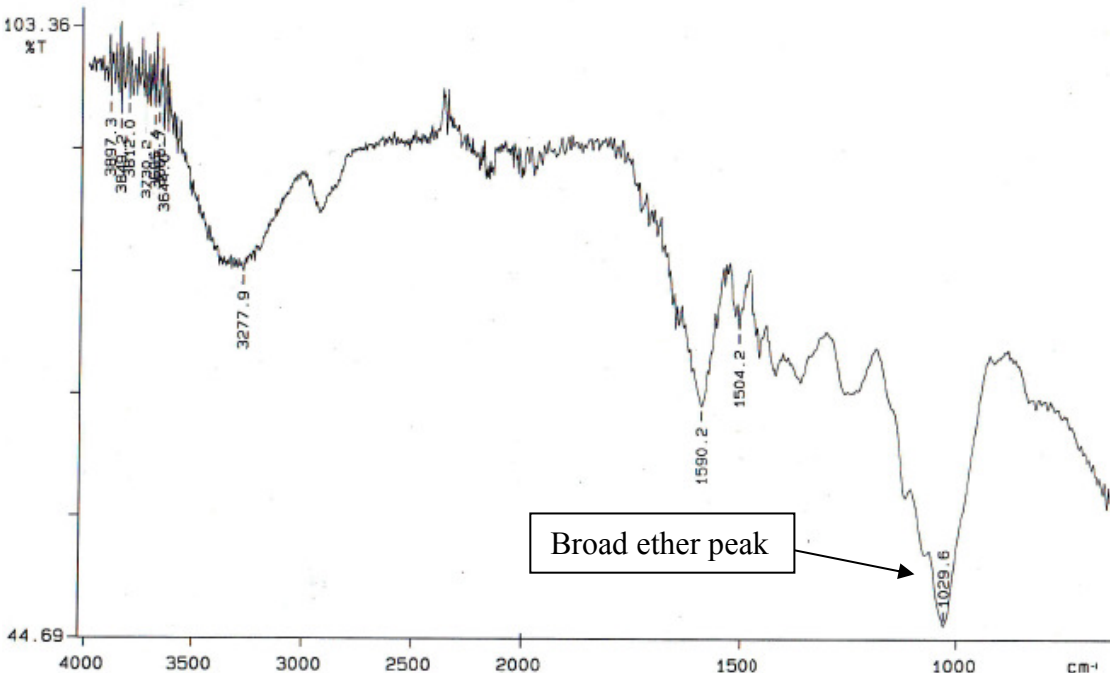

Fig. 6S IR of lignin from Hereward wheat straw. Broad ether peak typical of a grass lignin.

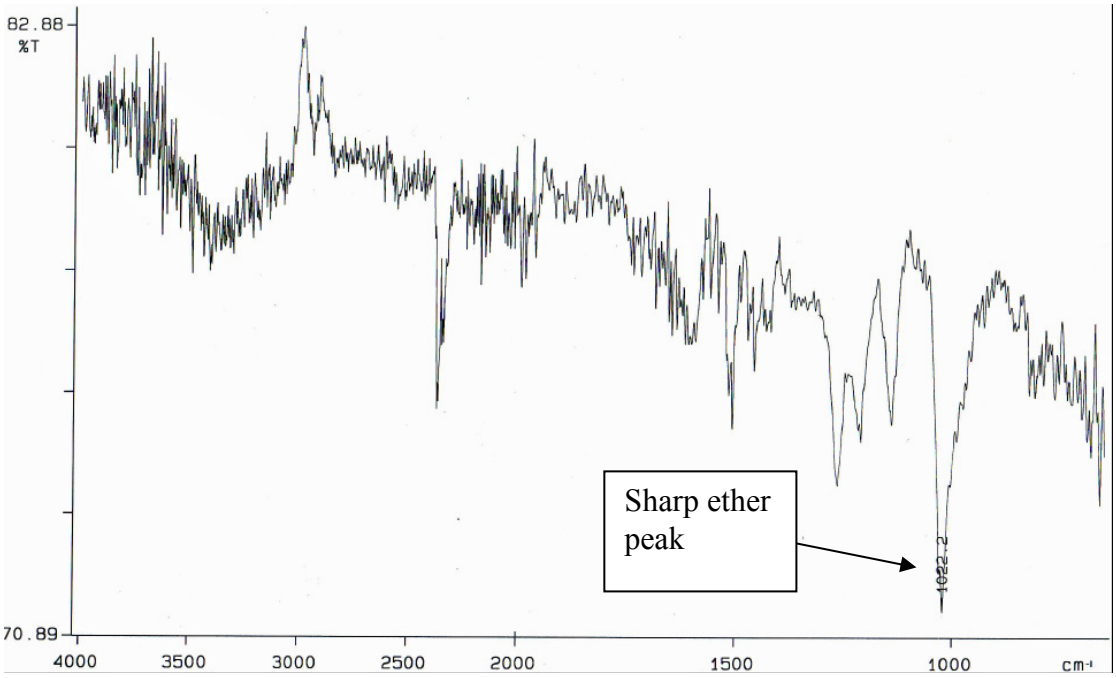

Fig. 7S IR of lignin from Scots pine. Sharp ether peak at 1022 characteristic of a hardwood lignin.

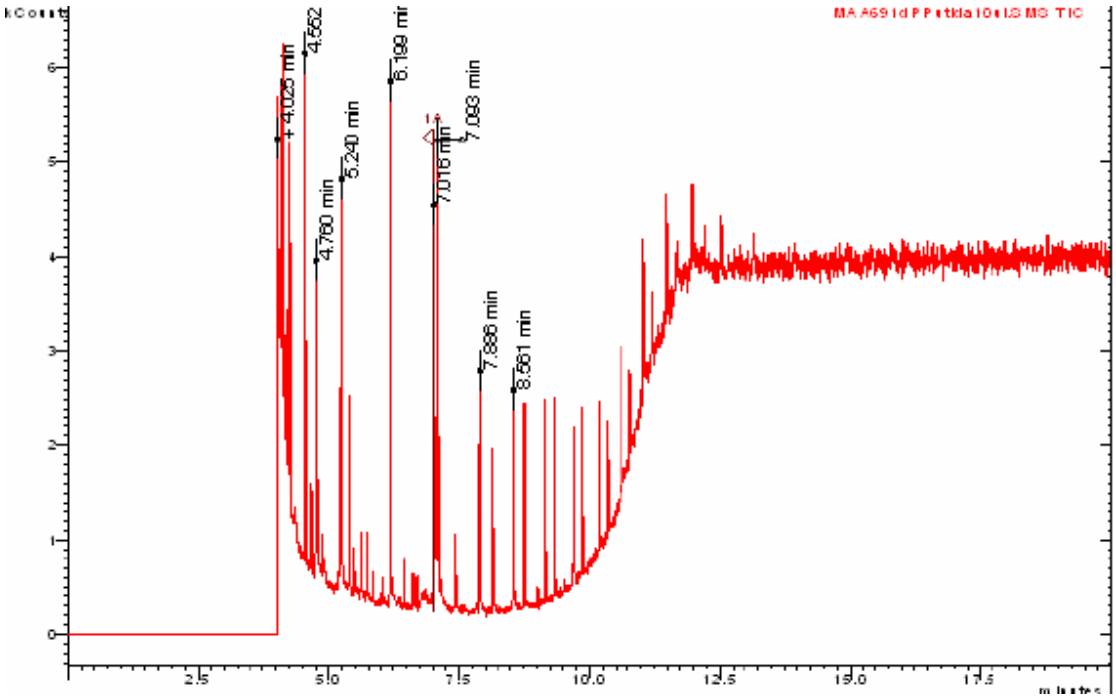

Fig. 8S Total ion chromatogram by GC-MS with EI ionisation for P.Putida sample after 1day with lignin in LB.

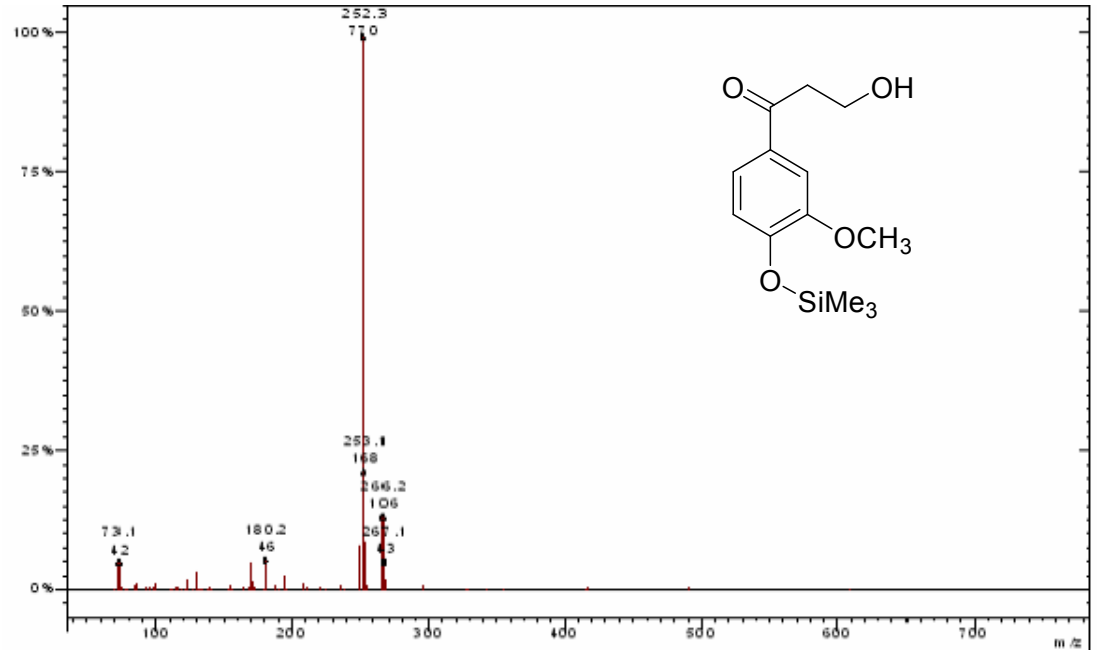

Fig. 9S The mass spectrum at 7.004 min corresponding to the mono silylated form of ketone **1**. GC-MS (monosilylated), *m/z* 268 $(M\text{-}SiMe_3)^+$, 253 $(M\text{-}SiMe_3\text{-}CH_3)^+$.

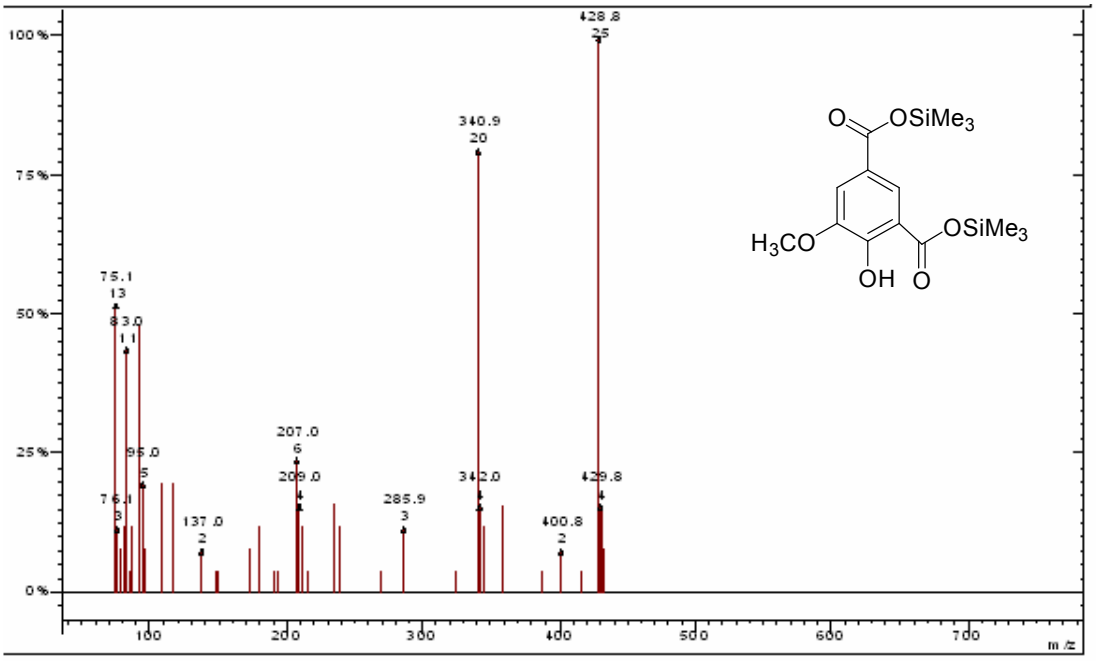

Fig. 10S The mass spectrum at 6.028 min, corresponding to the disylated acid **2**. GC-MS (disilylated), *m/z* 341(M-CH_3)$^+$, 283 (M-$SiMe_3$)$^+$, 239 (M-$SiMe_3$-CO_2)$^+$.

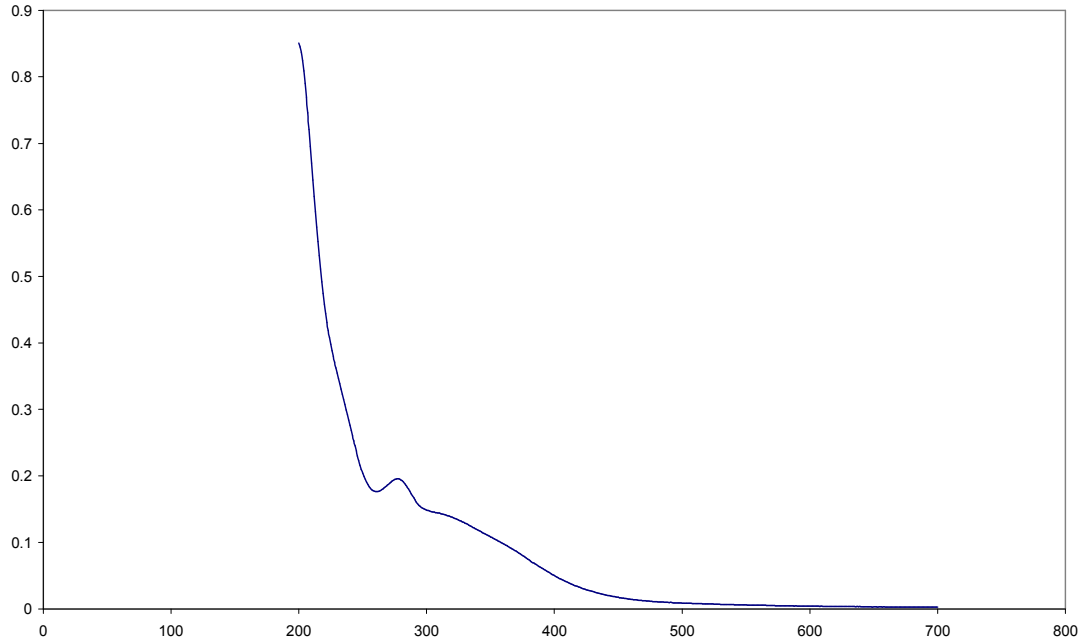

Fig. 11S Wheat lignin with a λ_{max} at 280nm

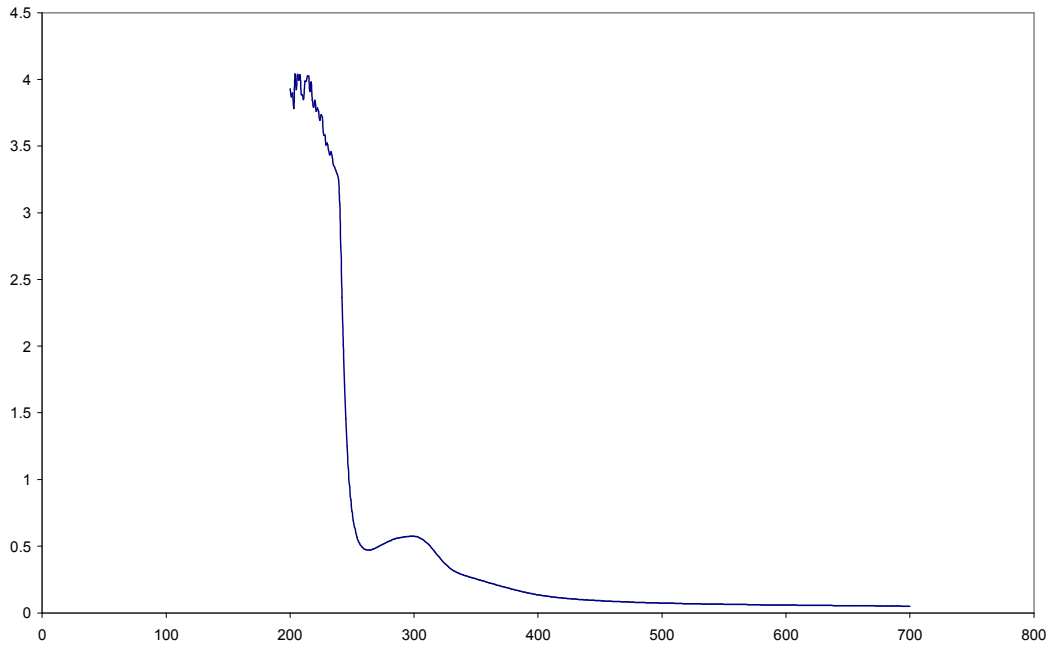

Fig. 12S Nitrated wheat lignin with a λ_{max} at 300nm