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## 8-51: Delignification of wheat straw by combined autohydrolysis and organosolv process

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There is a growing interest on the study of renewable lignocellulosic materials. Extensive research is being performed on the integral use of processes for the production of several commodity chemicals as derivatives and, particularly, for fuel-ethanol production. Wheat straw, an abundant by-product from worldwide wheat production, has been studied in this work in order to evaluate the lignin extraction based on the utilization of only water and ethanol, which are reusable materials. For this, milled material was initially treated with water at 180 °C in 30 min and separated by filtration. Lignin separation was carried out treating the solid phase with ethanol (1:10 w/v) and NaOH under different conditions of time and temperature (experimental design 2x2), precipitation was under acid conditions. The contents of obtained liquor in phenolic compounds were analyzed by HPLC. Wheat straw degradation effect of each treatment was observed by scanning electron microscopy, X-Ray diffraction and FT-IR. Results showed that among all the tested conditions the highest yield was obtained at 180 °C in 20 min. Phenolics concentration increased with the temperature, but the obtained values were approximately 30 % lower than the reported in the literature. SEM performed on wheat straw showed that treated with ethanol (organosolv process) was more degraded which is an advantage for fermentation process. The interference of the lignin on saccharification and fermentation is widely known, therefore this process has been developed aiming at a more efficient utilization of agro-industrial residues in 2nd generation bioethanol production processes. Financial Support: ALBAN Programme, FCT/Portugal.