O-37 EXTRACTION OF PHYTOCHEMICALS, COUPLED TO ENERGY CONVERSION

D.J. Carrier, E. Clausen, K. Vaughn, N. Shanmugan
Dept. of Chem. Engineering, U.of Arkansas, Fayetteville, AR

The world is in need of energy. Energy in the form of liquid fuels, fuel pellets or combustion gases can be obtained from lignocellulosic crops. Interestingly, certain scenarios are predicting the need for 377 million dry tons per year of perennial lignocellulosic crops by 2030. Perennial lignocellulosic crops contain phytochemicals, so why not extract the valuable phytochemicals prior to energy transformation? This presentation is centered on the perennial lignocellulosic crop *Albizia julibrissin*, which contains hyperoside and quercitrin in the range of 0.6 to 9.4 mg per g dry weight. *A. julibrissin* foliage, flowers and whole plant water extracts were prepared and tested for their potential to inhibit the oxidization of low density lipoprotein (LDL). Water extracts prepared from *A. julibrissin* foliage inhibited the generation of oxidized LDL as presented in Figure 1. Monocytes adhered (42,000 ± 8,000 cell number) to LDL incubated with $CuSO_4$, while monocyte adhesion was reduced to 500 ± 100 (cell number) when cells were co-incubated with 10 µM *A. julibrissin* water extracts. These results showed that, while not toxic, *A. julibrissin* water extracts inhibited the generation of oxidized LDL and subsequent oxidized LDL-mediated moncyte adhesion, a primary event in the development of atherosclerosis. Hyperoside and quercitrin water extracts could be prepared from the biomass prior to energy conversion.