Humic substance extraction from leonardite, lignite Mae Mho Mine by base-acid treatment process

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Humic substance (HS) is very important for soil agriculture that affect physical and chemical properties and improve soil fertility. Humic substances are complex mixtures of polydispersed materials formed by biochemical and chemical reactions during the decay and transformation of plant and microbial remains. Humic substances were extracted from leonardite from lignite Mae Mho Mine, Lampang province by using base-acid treatment and centrifugation. This research studied the effect of time and temperature in base treatment process and the effect of soils particle size. The humic substance which contain humin, humic acid (HAs). and fluvic acid (FAs) were extracted by base-acid treatment. Firstly, soil sample were stirred in base solution and precipitated by centrifugation. The humin precipitate that the fraction is not soluble in water at any pH value was dried at 90◦C. Then, the soluble(HAs and FAs) were pH adjusted to 2 by using 3M HCl and stirred in room temperature The humic fraction precipitate were separated by centrifugation and was dried at 90◦C. The soluble was pH adjusted to 4-5 and settled for 24 hr. The fluvic acid precipitate was dried at 90◦C. Humic substances were studied for element analysis and chemical structure by FT-IT, XRD, CHNO and studied for heat energy by bomb calorimeter. The yields of humic acid were increased at the decrease of soils particle size but it’s not significantly different in varying base treatment temperature.

Keywords Humic substance, Humic acid, Fulvic acid, leonardite, soil extraction