

KETONE AND ACID BIOMARKERS OF MIOCENE COAL FROM PIT INUL SANGATTA, EAST KALIMANTAN

Name : Hendra Siswanto Kusuma
NRP : 1410100043
Advisor Lecturers : Prof. Dr. R.Y. Perry Burhan, M.Sc
Dra. Yulfi Zetra, M.S

ABSTRACT

Lignite from Pit Inul Sangatta, East Kalimantan was formed during Miocene. Organic geochemical character (biomarker) can give information about coal descriptions for further utilization. Coal was extracted with dichloromethane: methanol (93:7) as a solvent. Bitumen extracts was fractionated by column chromatography to obtain neutral and acid fractions. Neutral fraction was further fractionated by thin layer chromatography (TLC) to obtain ketones. Components of the ketone fraction identified as *n*-nonadecan-2-one and 15-cyclohexyl-pentadeca-2-one expected from oxidation and cyclization of *n*-alkane by microbes. In addition, olean-13(18)-en-3-one and fridelan-3-one are present that inform the coal derive from terrestrial higher plants in oxic condition. Acid fraction was analyzed by gas chromatography-mass spectrometry (GC-MS) as methyl ester derivatives. Acid biomarkers identified in the form of normal methyl ester and branched methyl ester. Normal methyl esters (C₁₆-C₃₀) are dominated by even over odd carbon atom number that describes source of organic matters from higher plants. Methyl monoester with intermediate carbon chain (C₁₂-C₁₈) and aromatic carboxylic indicates contribution of bacteria. The presence of methyl 3,4-seco-fridelan-3-oic in studied sample shows the coal derive from terrestrial higher plants in oxidative depositional environment. Miocene coal from Pit Inul Sangatta, East Kalimantan was derived from terrestrial higher plants and

involvement of bacteria during diagenesis in oxidative depositional environment.

Keywords : acids fractions, biomarker, chromatography, ketones fraction, Miocene coal

