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GC-MS study: Selective of microwave-assisted degradation of Guaiacol Glyceryl Ether (GGE) to produce novel compounds in presence 1-butyl-3-methylimidazolium-based ionic liquids**Suzaimi bt Johari**

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Thermal stabilities and degradation behaviors of Guaifenesin (Guaiacol Glycerol Ether; GGE) were studied by means of the Differential Scanning Calorimetry (DSC) and Thermo-Gravimetric (TG/DTG, in nitrogen atmosphere) analyses. To investigate the microwave-assisted (MW-assisted) pathways of guaiacol production from lignin, Guaiacol Glycerol Ether (GGE), as a non-phenolic lignin model compound was exposed to microwave irradiation in the presence of three 1-butyl-3-methylimidazolium-based ionic liquids ([BMIm]-based ILs). GGE was subjected to microwave irradiation of 300 W in a batch reactor at a temperature of 200 °C, residence times of 5 minutes and air atmosphere. Based on the distribution of GGE conversion products identified by Gas Chromatography/Mass Spectrometry (GC/MS), the most degradation pathways of GGE were discussed. The highest yields of 2-methoxyphenol (guaiacol), 1-(2-methoxy-phenoxy)-propan-2-one, and 2-hydroxymethyl-1,4-benzodioxan were obtained using [BMIm][HSO₄]. [BMIm][HSO₄] was recovered and reused for three times without any loss of catalytic activity. It was found that it is possible to increase the yield of guaiacol from GGE by controlling of the different parameters such as molar ratio of water to GGE, acidity and anion effect of [BMIm]-based IL, amount of [BMIm]-based IL, microwave power and irradiation time.

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