

### Application of ionic liquids as additives in extraction of flavones from *Chamaecyparis obtusa*

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The application of ionic liquids based extraction methods such as Soxhlet extraction, ultrasonic-assisted extraction and heat-reflux extraction, were investigated for extracting five flavones dihydrokaempferol, quercitrin, amentoflavone, myricetin and 2-hydroxypalmitic acid from *Chamaecyparis obtusa* leaf and the Soxhlet extraction exhibited higher efficiency. In addition, eleven kinds of 1-alkyl-3-methylimidazolium with different cations and anions were investigated in this work and 1-dodecyl-3-methylimidazolium bromide ([C12MIM]Br) was selected as an additive in methanol in Soxhlet extraction. The Soxhlet extraction parameters including temperature, extraction time and additive-solvent ratio were optimized. Moreover, good linearity, reproducibility, and recovery were observed in the optimization experiments.