

ABSTRACT:

In the present study, a mathematical modeling for extraction of oil from clove buds using supercritical carbon dioxide was performed. Mass transfer is based on local equilibrium between solvent and solid. The model was solved numerically, and model estimation was validated using experimental data. For optimization, the clove oil equilibrium constant between solid and supercritical phase was determined by a theoretical method using fugacity concept, consequently the genetic algorithm for obtaining optimal operational conditions was used. The optimal conditions which obtained the highest amount of clove oil were pressure of 10 MPa and temperature of 304.2 K.