Complexation of herbicide bentazon with native and modified ?-cyclodextrin

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For first time the complexation of bentazon (Btz) with native ?-cyclodextrin (?-CD) and modified sulfobutylether-?-CD (SBE-CD) was studied by differential pulse voltammetry. In addition, a spectrophotometry UV-Visible study was carried out. In presence of CDs there is a decrease of the anodic peak current with the increase of the amount of CD. This decrease is due to the lower diffusion coefficient of Btz/CD complex compared with the free guest. Using the variation in current, association constants of 118± 20 and 317 ± 25 M-1 for ?-CD and SBE-CD were determined. The solubility of bentazon was 8 fold higher with SBE-CD as compared with bentazon-free. Phase solubility diagrams performed using UV-Vis experiments permit to obtain the same association constants which were compared with the values obtained by electrochemical techniques. © 2010 Springer Science+Business Media B.V.