

## The Mass Attenuation Coefficients, Effective Atomic Numbers and Electron Densities for Some Narcotic Drugs: Theoretical Calculation

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### ABSTRACT

The tramadol, codeine, fentanyl, buprenorphine, oxycodone, propoxyphene and amphetamine narcotic drugs of mass attenuation coefficient values were calculated in the energy range from 1 keV to 100 GeV with the help of the WinXCOM program. These mass attenuation coefficient values were used to derive other absorption parameters such as total molecular, atomic and electronic cross sections, effective atomic numbers and effective electron densities for total photon interactions of selected narcotic drugs. The all results were plotted graphically as a function of photon energy. It is observed that significant changes in effective atomic numbers and electron densities for selected narcotic drugs in different energy regions where the photoelectric and pair production processes are mainly dominated. The effective atomic numbers and electron densities are almost constant in the intermediate energy region where the Compton scattering is mainly predominated. These results can be used in the field of medical diagnostic and forensic sciences.