

Determination of Drugs of Abuse and Their Stereoisomers by Circular Dichroism

REFERENCE: Purdie N: Determination of drugs of abuse and their stereoisomers by circular dichroism; *Forensic Sci Rev* 3:1–16; 1990.

ABSTRACT: More than half of the total drugs in the world are optically active, yet this physical property is all but ignored as an experimental means in drug analysis. Part of the reason may well be that, until recently, regulatory agencies have not required the verification of the absolute stereochemical configuration of a drug molecule. In a forensic context, isomeric *confirmations* are limited to the recognition of different habits in routine microcrystalline tests. Chirality confirmation is a new regulation introduced by the U.S. Food and Drug Administration for new drug submissions in the pharmaceutical sciences and a rapid, relatively routine procedure is needed. Of the three possible chiroptical detectors that might be used, circular dichroism (CD) has the greatest potential for selectivity and breadth of application with a minimum of sample preparation. The method, once perfected, will be equally invaluable to forensic analyses. Analytical results are reported for a number of drugs of abuse, both enantiomers and diastereoisomers. Chiroptical detection methods are critically compared with chromatographic options.

KEY WORD: Chiral separation, chiroptical detection, circular dichroism, diastereomers, enantiomers, optical purity, optical rotatory dispersion.