Chapter 19
Herbal Drugs of Abuse

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Abstract Substances taken for nonmedical reasons, usually for their mind-altering effects, are called drugs of abuse. The use of psychoactive plants as drugs of abuse has had a long tradition. Most commonly abused drugs extracted from or based on natural products are illicit substances, such as cannabis products, morphine, or cocaine, but other herbal products used to produce a “high” are becoming increasingly popular drugs of abuse. Unfortunately, these “new herbal drugs” are falsely labeled as safe and legal. This chapter gives a brief historical background of herbal drugs of abuse, a description of the classical herbal drugs of abuse, and their current trends of use. The monographs of the different herbal drugs of abuse contain descriptions of the plants, their pharmacologically active compounds, and the current knowledge of their pharmacological properties.

Keywords Herbal drugs · Abuse

Abbreviations

CE Common Era
BCE Before Common Era
DMT N,N-Dimethyltryptamine
LSD Lysergic acid diethylamide
MAO Monoamine oxidase
MMDA 3-methoxy-4,5-methylenedioxyamphetamine
NMDA N-methyl-D-aspartic acid
RNA Ribonucleic acid
THC Δ9-Tetrahydrocannabinol
TMA 3,4,5-trimethoxyamphetamine

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19.1 Introduction

Drugs of abuse are defined as substances taken for nonmedicinal reasons, usually for their mind-altering effects. Most often these abused drugs are illicit substances such as heroin, cocaine, etc., but prescription and over-the-counter drugs are also abused. Abuse of ethical drugs (prescription or over-the-counter) occurs when people use the drugs in a manner or in quantities other than those directed, or for purposes that are not legitimate.

Many drugs abused in modern society are extracted from or based on natural products. The dangers associated with these drugs are substantially enhanced when the active substance is isolated from the plant material and used as essentially a pure drug, for example, heroin (derived from acetylation of morphine from the opium poppy) and cocaine when isolated from *Erythroxylum coca*.

Herbal products used to produce a “high” are becoming increasingly popular drugs for abuse [1]. These substances include obvious examples mentioned earlier as well as plants containing tropane alkaloids, plants containing stimulants such as caffeine, ephedrine, and khat, hallucinogenic plants, or even the alkenebenzene derivatives in nutmeg. The most common drugs of abuse of herbal origin sorted by scientific name, including the common English name, most common use, and most important active compound are summarized in Table 19.1.

The source of knowledge by users is often Internet based; “trip reports” and descriptions of the plants are shared among drug users, and often, unfortunately, the “new herbal drugs” are falsely labeled as safe and legal [2].

19.2 Historical Background of Herbal Drugs of Abuse

The use of psychoactive plants for mind-altering purposes has a long tradition. Archaeological evidence shows the use of psychoactive plants by humans for many thousands of years, often in a highly ritualized and ceremonial context [3].

The earliest archaeological evidence of a potential psychoactive plant in a cultural context is from a Neanderthal burial site in northern Iraq. Large quantities of pollen of different plants (including *Ephedra* spp.) have been found in the soil surrounding a male Neanderthal burial [4]. The pollen was dated to more than 50,000 BCE.

This finding might indicate that the body was deliberately, perhaps ritualistically, buried on a bed of plants [4].

Evidence of the use of cannabis found in Taiwan has been dated to approx. 10,000 BCE. Cord-impressed pottery with possible fiber evidence has been found in early postglacial fishing sites [3].

Preserved remains of plant and animal material including seeds of *Papaver somniferum* were found in ruins of a Stone Age settlement in Italy. The seeds were presumably cultivated for food, medical, and possible cult use and were dated to 5500 BCE [3].