

# NEW TREATMENTS FOR COCAINE DEPENDENCE

Cocaine is an addictive drug which acts in the area of the brain associated with pleasure and appetite. Chronic, long-term cocaine use can lead to changes in brain pathways causing the physical aspects of addiction including tolerance to high doses and withdrawal symptoms when drug use is abruptly stopped. A combination of physical, psychological and behavioural components makes cocaine addiction a complex and difficult condition to treat. Unlike heroin or nicotine, there are no medications that either block or mimic cocaine's effects without unacceptable side-effects. Medications which help patients with the intense cocaine cravings which trigger relapse would be very valuable by attracting and keeping patients in the counselling needed to help them manage cocaine-related thoughts and behaviours.

## Dexamphetamine

Dexamphetamine is a pharmaceutical stimulant approved in Australia for sleep and attention disorders. The physical and psychological effects of cocaine and amphetamine are similar. Experienced cocaine users are unable to distinguish intravenous cocaine and dexamphetamine. The main differences are the numbing anaesthetic effect of cocaine and the longer half-life of dexamphetamine (8 hours compared to cocaine 30 minutes). Oral doses of dexamphetamine have been examined as a substitute for cocaine in studies in Australia and the US. The results have been promising with reduced cocaine use and associated problems when compared to placebo or dummy drugs.

## Modafinil

Modafinil is a new type of wake promoting drug approved in Australia for narcolepsy, a sleep disorder characterised by sudden and uncontrollable episodes of deep sleep. Modafinil improves wakefulness, vigilance and alertness and may reduce cocaine withdrawal symptoms like poor concentration, excessive sleepiness and low mood. Early research reports from the US have been encouraging. Modafinil appears to act in a different part of the brain compared to other stimulants such as cocaine and amphetamine and for that reason may not have the same habit-forming potential. Modafinil appears to reduce the effects of cocaine and cravings in a way which is both acceptable and comfortable for users. Modafinil has not been studied in Australia.

## Vaccines

Vaccines are designed to stimulate the body's immune system defences to target and neutralise cocaine molecules in the blood stream before they get into the brain. Vaccines have been developed to target both cocaine and nicotine and both are doing well in clinical trials of safety and effectiveness in humans. The advantages of vaccines include fewer side-effects than psychoactive drugs and no need for patients to take daily medication. However, current vaccines are only temporary, do not suppress cocaine cravings and patients need to attend for a series of booster shots before cocaine effects are completely blocked. Vaccines have not been studied in Australia.