

Cocaine and tobacco vaccines are likely to become useful weapons in the battle against addiction. But could this breakthrough herald a future in which humans are denied their right to become intoxicated? **Stuart Walton** looks at the ethical problems of drug vaccines

## Anti-drug vaccines the end of high society?

**T**HE search for addiction cures has been the Holy Grail of research pharmacology for over a century now. Ever since morphine was disastrously held up as a possible solution to opium dependency in the nineteenth century, the idea that the cycle of craving that sustains any habit could be broken by administration of some simple antidote has proved a tantalising one. With cigarette smoking once more on the increase, and substances such as cocaine – once the sole preserve of the overpaid and under taxed – penetrating all economic classes, addiction cures are very much back on the agenda.

### FINDINGS UNVEILED

This was confirmed again in September at the annual gathering of the British Association. Dr Campbell Bunce, of Slough-based company Xenova Research, unveiled findings from the trials of two potential new vaccines – one to help smokers, the other for the treatment of cocaine dependency. What essentially causes addiction in these cases is that the molecules of nicotine and cocaine are so tiny

that the immune system doesn't see them, and so doesn't generate the antibodies that might neutralise their presence in the bloodstream. Xenova's vaccines work by bonding large proteins to the intoxicants, in the presence of aluminium hydroxide (commonly used in other vaccines), so that as the alkaloids in the line of coke or the lungful of cigarette smoke make their way towards the blood-brain barrier, they acquire an accretion of antibodies that now make them too bulky to cross into the brain.

Trials of similar substances in the past had been confined to laboratory rats, but Xenova's control groups have been voluntary patients attending counselling services for cocaine addiction, as well as a number of smokers. Early reports are promising. Suddenly, their drugs of choice don't work as they normally do, thus neatly removing what's known as the reinforcement effect of drug-taking – and without any side-effects.

### PROTECTING CHILDREN

Bunce was (mis)quoted as saying that in future, parents might wish their adolescent children to be protected against a drug habit, but



that turns out to be some way off the mark. He told me that current thinking at Xenova is that the cocaine vaccine should not be used prophylactically, if only because there seems little point in medical interventions where there is still statistically little risk of a problem developing. But vaccinating against nicotine might well be another matter. As cigarettes are freely available, there may well be a case for distributing the nicotine vaccine on request.

As Xenova acknowledges, there are substantial ethical issues involved. Whose decision should this be? Does not even the adolescent whose thirst for experience leads her to make any number of ill-judged decisions for herself still have the right to make them? Managing to prevent her from getting a navel-piercing, at least for a few months, may be one thing, but frogmarching her to Outpatients to receive a course of intramuscular injections is quite another. As Bunce readily agreed, the dissemination of the vaccine at this age could backfire spectacularly. Persuading a 15-year-old that a course of treatment designed to deprive him of an experience his mates may well be telling him is the last word in cool is

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only likely to foment an even greater likelihood of defiance.

#### HUMAN IMPULSE

Intoxication in all its forms, whatever dog's-breakfast of illegality or semi-legality governments have created around it, is a universal and abiding human impulse. It is of course fraught with peril, but perhaps to nothing like the degree that the experts would have us believe. The recourses that human beings will resort to in the face of official interdictions amount to a moving, often pathetic, sometimes heart-warming, testimony to the durability of this impulse, from the spinning games of infancy to the disaster wrought by alcohol prohibition in the United States in the 1920s and '30s.

#### PSYCHIC RELIEF

Vaccinating the receptivity to intoxication out of ourselves would not only remove a large stratum of cultural experience from our lives, but would also deny to us the crucially important psychic relief that altered consciousness affords. This is the evolutionary use to which intoxicants were intended to

be put. It wouldn't be at all apocalyptic to suggest that, at the very least, the suicide rate in a world without drugs would go through the roof. When too much of reality fails to deliver the satisfaction hoped for, or only delivers it at demoralisingly sporadic intervals, it is the use of intoxicants that sustains us. This should not be mistaken for the addiction paradigm erected by questionnaires that ask whether you ever find yourself really *needing* a drink (yes, about seven o'clock each evening, mostly), but is a hard-wired feature of our biology as rationalising, sentient mammals.

There is even talk about the possible future development of life-long vaccines. More research is currently going on as to whether the hardened user of tobacco or cocaine might not be able to bypass

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the neutralising effects of the vaccine by simply increasing the dose, but if not, then it isn't hard to see that it may well be possible (funds permitting) to develop a vaccine strong enough to knock out the efficacy of drugs for longer than the few months for which the current serum is effective.

#### TRUTH OBSCURED

Why would we want to do this? The six-figure fatalities from smoking-related conditions are one reason, it is suggested, as is the exponentially increasing uptake of cocaine among sectors of society that could previously only afford dope or bathtub speed. As always, though, the hidden truth about drug use, which is that most of it is unproblematic and carries no long-term health implications for users, is obscured in the interests of fomenting an atmosphere of medical and criminal emergency. The feeling that whatever risk there is in our intoxication practices, however minimal, is great enough to make it worth searching for some kind of panacea to keep us away from it is not only fascinatingly naïve, but under the weight of historical evidence, doomed to failure.

#### OVERLOOKED

None of this is to deny that Xenova's vaccines could be a lifeline for patients whose health is in danger, or whose lives have become untenable, as a result of addiction. Since they neuter the impact of drugs in the system, they dispense with the craving for more that ordinarily keeps the cycle going. They can do nothing, however, about the anxiety and depression that accompany withdrawal. Over and above this, I wonder whether a deeper psychological force has been overlooked by researchers.

Is it not likely that, even though the hit of cocaine that you try after the vaccine has been absorbed now miraculously has no effect, sooner or later a memory of that gorgeous, electrified sensuality that it once imparted to you will return, and with it, the desire to recover what will now seem like a land of lost content? If so, perhaps the best use for the vaccine will lie in giving yourself a break from the harmful side-effects for a while, so that the post-vaccine return to your drug will feel all the more like a joyous homecoming. ■