Unfortunately, the title of the *Nature* News and Views article<sup>4</sup> about the new findings read "Smoking... harmful to the brain", when there was little if any evidence presented to suggest that nicotine itself is harmful to the brain. Although tobacco contains nicotine, it also contains many harmful chemicals in the tar and smoke. It is likely that the increase in cancers and other diseases among smokers is due in large part to the many non-nicotine substances found in cigarette smoke<sup>1</sup>.

The smoker's habit is very complex and is associated with many factors. These include flavour, smoke, personality, mood and the social setting one happens to be in, which may involve having an alcoholic drink, being under stress or, among other things, having fun. Perhaps most important, however, is the rapid rise in blood levels of nicotine associated with inhalation of tobacco smoke<sup>2</sup>. Indeed, an important

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characteristic of all drugs that produce dependency is the time between behavioural administration (smoking a cigarette) and the drug's entry into the brain.

The US Food and Drug Administration has recently approved the over-the-counter sale of transdermal nicotine as a smoking cessation aid, a drug delivery system designed to avoid the harmful chemicals found in cigarette smoke. The slower absorption of nicotine offered by the transdermal nicotine patch relative to tobacco products should substantially reduce the likelihood of nicotine dependence in users of the patch. For example, a recent doubleblind, placebo-controlled study investigating the therapeutic potential of the transdermal nicotine patch for ulcerative colitis found little evidence for nicotine withdrawal symptoms following discontinuation of the patch, despite 26 weeks of daily applications of 15-mg nicotine patches<sup>5</sup>.

Cigarette smoking is clearly a major health problem, and decreasing its use is a worldwide effort, but there is also a growing body of evidence to indicate that nicotine has therapeutic properties. Nicotine improves cognitive function and may reduce the symptoms of certain neuropsychiatric disorders such as Tourette's syndrome and attention deficit/hyperactivity disorder<sup>6,7</sup>. But many of these efforts will be hampered if the role of nicotine in cigarette smoking is overemphasized without acknowledging the

essential differences between nicotine, tobacco and other drugs of abuse.

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## **Strange characters**

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