

# Correspondence

## Vitamin B<sub>3</sub> for Nicotine Addiction

Two recent reports by Foster have illuminated the need for a healthier cigarette.<sup>1,2</sup> While the addition of sodium selenite to cigarettes might be protective against the development of lung cancer, this would not help addicted patients abstain from smoking, which is, of course, the best possible outcome. Abstinence from cigarette smoking is possible since there is research behind the treatment of nicotine addiction with bupropion HCL (Zyban) and nicotine replacement therapy (NRT), in the forms of gum, inhalation, nasal spray, and transdermal patch, that have been proven to be effective for patients who are motivated to quit smoking.<sup>3</sup> Despite the effectiveness of NRT, side effects and other complications can occur with nicotine gum and the transdermal patch. With nicotine gum, the most common side effects are stomatitis and indigestion. In addition, close to 10% of nicotine gum users will become dependent, such that they will require one to two years of use to maintain abstinence.<sup>4</sup> With the transdermal patch, side effects such as insomnia, vivid dreaming and gastrointestinal complaints can be minimized with lower dosages, but may occasionally require drug discontinuation.<sup>4</sup>

An alternative approach to standard methods of NRT might be accomplished by the oral administration of vitamin B<sub>3</sub> (niacin/nicotinic acid or niacinamide/nicotinamide). In a brief communication regarding the use of niacin for nicotine addiction, Clarkes stated the following: (1) niacin is chemically similar to nicotine; (2) nicotine might occupy niacin receptor sites in the central nervous system (CNS) creating a niacin deficiency; (3) the calming effects of cigarette smoking may actually be the result of nicotine occupying these niacin receptor sites; and (4) it may be possible to wean smokers off nicotine by administering niacin.<sup>5</sup>

I have used niacin or niacinamide in several patients with nicotine addiction. The

doses I prescribe range from 1.5-3 grams per day of niacin or niacinamide. The sole use of vitamin B<sub>3</sub> has enabled a few of my patients to wean off cigarettes comfortably within a 2-3 week period. In most cases, patients continued to smoke, but their cravings for cigarettes were considerably reduced and their intakes were roughly halved as a result of the vitamin B<sub>3</sub> treatment.

If Clarkes' hypotheses are correct, the addiction to and cravings for nicotine might exacerbate or promote a vitamin B<sub>3</sub> deficiency and stimulate a biological need to have niacin receptor sites occupied. Nicotine addiction and other conditions such as alcoholism, diabetes, early porphyrias, eating disorders, heart failure, hypertension and pellagra, appear to be among a category of diseases known as the NAD Deficiency Diseases (NAD-DD).<sup>6-8</sup> NAD-DD result from long-term, sub-optimal intake of vitamin B<sub>3</sub>, which leads to a deficiency of NAD, and results in diseases or unwanted behaviours and addictions geared towards the filling of unoccupied NAD receptor sites. The principle treatment for the NAD-DD is the administration of optimal amounts of vitamin B<sub>3</sub> in order to cover the NAD receptor sites and shut-off the vicious addiction-withdrawal cycle.

Alcoholism is an excellent example of a NAD-DD. Cleary has reported on various aspects of alcohol addiction such as: the craving for alcohol; the relationship between opioids and NAD receptor sites; and the need for niacin as a means to withdraw and abstain from alcohol.<sup>7</sup> According to Cleary, alcohol consumption increases the formation of acetaldehyde, which then combines with dopamine to form morphine-like compounds that fill brain NAD receptor sites and temporarily shut-off withdrawal symptoms. When these receptor sites become unoccupied or unbound, withdrawal symptoms occur and the craving for alcohol begins once again. Cleary reports that it is possible to stop the addiction-withdrawal cycle by substituting

alcohol with optimal amounts of niacin. The net effect is a reduction of drinking behaviours, cravings and withdrawal symptoms via the occupation of the NAD receptor sites as well as the reduction of acetaldehyde levels. Overall, niacin reduces the patient's addiction to alcohol by correcting the underlying NAD deficiency.

Anorexia nervosa may be another example of a NAD-DD. Cleary and Cleary report that in anorexia nervosa, a deficiency of NAD leads to the production of hunger-suppressive endorphins which eliminate normal satiety signals, thus making it easier to starve oneself.<sup>8</sup> They further hypothesized that adequate niacin brings NAD levels to normal, eliminating the addiction to endogenous endorphins, thus resulting in a return of normal hunger signals and eating behaviours within 24 hours.

It also seems apparent that nicotine addiction, like alcoholism and anorexia nervosa, is a disease where the deficiency of NAD is central to the addiction-withdrawal cycle. Thus, the most effective form of treatment might be accomplished by providing optimal amounts of vitamin B<sub>3</sub>. It should also be noted that acetaldehyde is the principle aldehyde found in tobacco smoke and is a potent psychoactive compound that has very addictive opiate effects within the CNS.<sup>9</sup> In the same way that niacin reduces acetaldehyde concentrations from alcohol ingestion, vitamin B<sub>3</sub> might also reduce the acetaldehyde produced from tobacco smoke and diminish the cravings for nicotine.

Although this report is brief, it is hoped that it will stimulate other clinicians to try this novel approach. Vitamin B<sub>3</sub> might, in fact, be the best alternative method of treatment for nicotine addiction.

## References

1. Foster HD: Designing a better cigarette: a role for selenium supplementation. *J Orthomol Med*, 2002;17(1):4-6.
2. Foster HD: A healthier cigarette? *J Orthomol Med*, 2002;17(3):170.
3. Jones DL, Mobley CC: Treatment of nicotine addiction. *Texas Dental J*, 2000;June:26-32.
4. Danis PG, Seaton TL: Helping your patients to quit smoking. *Am Fam Physician*, 1997; 55(4): 1207-1214.
5. Clarkes R: Niacin for nicotine? *Lancet*, 1980; 1(8174): 936.
6. Cleary JP: The NAD deficiency diseases. *J Orthomol Med*, 1986; 1(3):149-157.
7. Cleary JP: Etiology and biological treatment of alcohol addiction. *J Orthomol Med*, 1987; 2(3): 166-168.
8. Cleary MJ, Cleary JP: Anorexia nervosa: a form of subclinical pellagra. *Int Clin Nutr Rev*, 1989; 9: 137-143.
9. Patrick L: The biochemistry and pathology of nicotine dependence. *J Naturopath Med*, 1998; 8(2): 45-48.

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*Correction:* In *A Comment on Safe Upper Levels of Folic Acid, B<sub>6</sub> and B<sub>12</sub>* in JOM 18.3 & 4, 2003, p. 166-167, the paper's co-author, Kilmer McCully, was omitted. The 30 grams of folic acid in the second paragraph refers to powder, not tablets. The correct unit of measure for homocysteine is micromols per litre.