

tobacco and 8.3% were current smokers.<sup>2-4</sup> The survey reported the misconception in many youths that smoking is good for teeth and health and nearly half of smokeless tobacco users needed the tobacco first thing in the morning. The survey also reported that 68.5% of students who smoked wanted to stop and 71.4% had tried during the past year. This is a strong indicator of common quit attempts in youths and they should be provided with help to quit.

Dentists and other oral health professionals are recognised as ideally positioned to counsel against the use of tobacco products and should be encouraged to do so in India and other low and middle income countries.

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## LIQUORICE ALERT

Sir, we bring to your attention concerns regarding possible adverse clinical effects of an innovative anti-caries lollipop containing a liquorice derivative.

Much fanfare has heralded the introduction of a new cavity-fighting lollipop containing a liquorice root extract that inhibits the growth of *Streptococcus*, important in initiating dental caries.<sup>1,2</sup> Should global consumption of this liquorice-flavoured candy be adopted the prevalence of dental decay may be reduced. However, excessive lollipop use is cautioned because overconsumption of liquorice has potential clinical risks. Liquorice is a ubiquitously employed food flavourant that also possesses therapeutic properties.<sup>3</sup> As such its commercial use is at an all-time high. The major active ingredient of liquorice, glycyrrhizin, is 100-200 times sweeter than processed sugar. In addition to its flavour-enhancing

qualities, glycyrrhizin exerts many pharmacological actions, such as its anti-cariogenic effects.

Excessive intake of glycyrrhizin is associated with adverse side effects including increased blood pressure, hypernatraemia and hypokalaemia. Glycyrrhizin blocks the activity of the enzyme, 11 beta-hydroxysteroid dehydrogenase type 2, that converts cortisol to inactive cortisone. Cortisol, in turn, binds to mineralocorticoid receptors (MR), promoting sodium reabsorption, potassium excretion and hypertension, a clinical triad characteristic of liquorice-induced pseudoaldosteronism,<sup>4</sup> which is becoming a more frequent phenomenon with increased use of liquorice as flavourants.

Dosage needs consideration when assessing glycyrrhizin-related risks. The Joint FAO/WHO Expert Committee on Food Additives and the European Community's Scientific Committee on Food recommend a maximum of 100 mg/day. Glycyrrhizin consumption levels in USA are 0.03-3.6 mg/kg/d and at its upper limit, would exceed the above recommendations in individuals over 30 kg. Allowable glycyrrhizin content varies amongst foods: lowest in baked goods, highest in hard candy. Many published cases of pseudoaldosteronism involve excessive consumption of liquorice/glycyrrhizin. One could argue that these levels are higher than could be achieved through even heavy consumption of the anti-caries lollipops. Although the glycyrrhizin concentration in these lollipops is not available and it is reasonable to assume that each lollipop contains low levels of glycyrrhizin, cumulative effects of multiple lollipops and other sources of ingested glycyrrhizin (tobacco, herbal medicines, candy), may raise levels beyond the recommended limit.

Marketing of these lollipops is largely targeting children and the elderly, two sub-populations particularly susceptible to the mineralocorticoid actions of liquorice. For instance, with the rising incidence of childhood obesity and accompanying health complications including diabetes and hypertension, excessive liquorice intake in children may compound pre-existing health risks.

We feel that cavity-fighting lollipops are innovative anti-caries products, appealing to the public and economically attractive to the health care system. The fact that liquorice and its derivatives are exempt from FDA regulation may inadvertently project a false sense that liquorice ingestion is safe at even high levels. Here, we raise concerns regarding overconsumption of liquorice-containing food and medicinal products. We alert the dental community of the potential clinical risks of excessive or prolonged use of these lollipops and the importance of educating patients on complying with specified doses for the lollipops (ie two per day, for up to ten days).

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## VOICING SUPPORT

Sir, I write in response to a letter from Patel, Evans and McKechnie (*Fundamental training*; *BDJ* 2009; **207**: 51) to voice support for the fundamental training currently provided for our UK graduates. I believe that the authors have highlighted an important value of postgraduate training; however, are they confusing a lack of confidence with incompetence?

Dentists are now expected to be competent but not confident in all aspects of the profession upon graduation. It is well recognised that acquiring and improving skills ought to be a lifelong process. Continual professional development is significant from the outset of a dental career and this can be initiated by a two-year structured training pathway as set out in 'A Curriculum for UK Dental Foundation Programme Training'.<sup>1</sup> I urge all readers to familiarise