

Snus – The Swedish Experience

The purpose of this paper is to present the views of Swedish Match on the WHO Framework Convention on Tobacco Control, and especially in relation to the Swedish *snus*. This paper summarises the scientific data available regarding *snus*, as we, to the best of our knowledge, understand them.

Swedish Match is a Sweden based international group and one of the world's leading companies in the area of niche tobacco products, collectively known as *Other Tobacco Products – Smokeless Tobacco, Cigars and Pipe Tobacco*. Swedish Match has long experience within the *OTP* area and is among the leaders in terms of technical expertise relating to product development and production processes. Swedish Match's extensive range, comprising well-known brands in the *OTP* area, has resulted in strong market positions in selected geographic markets.

What is Swedish *snus*?

Swedish *snus*, manufactured by Swedish Match, is a moist to semi-moist, ground, oral smokeless tobacco product. It is made from selected, mainly air-cured tobaccos, water, salt and flavourings. *Snus* is produced in a proprietary heat-treatment process that complies with food standards. The moisture content of the product ranges between 30 and 60 %. Packaging forms vary: loose *snus*, which is sold in 50 g cardboard or plastic cans and portion-packed *snus* which is sold in three packaging varieties. The vast majority of Swedish *snus* users place the *snus* in the upper vestibular cavity of the mouth. Swedish *snus* is regulated by the Swedish Food Act.

Except for Sweden, *snus* has been banned since 1992 in the European Union countries. The legislative background for the ban is Art. 2.4 of Directive 92/41/EEC. The Article 2.4 defines those smokeless tobaccos that may not legally be sold in the European Union. Since *snus* is widely used in Sweden, the Swedish government obtained permanent derogation from the ban on certain smokeless tobacco products as part of the terms under which Sweden joined the European Union.

Snus and harm reduction strategies

Swedish Match has put a lot of effort into improving product quality in order to minimise any possible health risks. This goes all the way from the selection of leaf tobacco to the manufacturing process. Swedish Match selects its raw materials carefully taking into account not only traditional leaf characteristics but also chemical data. The manufacturing involves a proprietary heat treatment process instead of the more commonly used fermentation. As a result of these measures *snus* contains lower levels of nitrosamines, polycyclic aromatic hydrocarbons and other controversial compounds than similar smokeless tobacco products.

As all tobacco products, *snus* contains nicotine. The blood nicotine levels in *snus* users do not differ from the levels in cigarette smokers. We wish to stress this point as we are aware of the common misconception that *snus* contains more nicotine and delivers more nicotine than cigarettes (1-3).

The health effects associated with the use of *snus* have been evaluated in several independent

scientific studies. These studies show that the adverse health effects associated with the use of *snus* are much lower than those associated with cigarette smoking (detailed below).

Sweden is the only country to have reached the WHO goal of reducing cigarette smoking to less than 20% of the adult population. Sweden has one of the most effective anti-smoking policies in Europe, measured by the significant reduction of the numbers of smokers. *Snus* has played an important role in achieving this goal, since 54% of the *snus* consumers are ex-smokers. *Snus* is used by 20% of Swedish males and by 2% of Swedish females and consumption is increasing. If *snus* was not available these people might still have been cigarette smokers.

The evidence available demonstrates:

- That *snus* is significantly less harmful to health than was previously thought when it was banned by the European Union in 1991 and
- That *snus* can play a constructive role in a tobacco related harm reduction strategy.

Health risks associated with moist snuff - Swedish *snus* and scientific evidence

As stated above, a significant body of scientific evidence now clearly shows that the health risks associated with *snus* use are significantly lower than those associated with cigarette smoking (this may be understandable since the *snus* user is not exposed to the toxic pyrolysis products generated by cigarette smoking). The European Commission has recognised this. The proposed Directive on tobacco labelling, endorsed by both the European Council and the Parliament, clearly distinguishes between the health warnings for cigarettes and for smokeless tobacco.

The health warning on smokeless tobacco is proposed to be changed to "This product can damage your health and create addiction" instead of the present requirement "Smokeless tobacco damages health seriously" and "Causes cancer". The Commission's moderation of the health warning reflects the scientific consensus, which has developed over the past 10 years. Several, independent, scientific studies have looked at the health patterns of Swedish users of *snus* and found that the product is not associated with cancer.

Cancer

Swedish *snus* does not increase the risk of dysplastic changes and is not a risk factor for oral or gastric cancer.

The key findings of the scientific studies are:

- **High daily use of *snus* gives rise to oral mucosal changes, which are reversible after cessation of *snus* use (4). The probability of these lesions to transform into cancer appears to be low (5).**
- **No statistically significant association between oral cancer and *snus* use was observed in two epidemiological case-control studies. It was also shown that tobacco smoking and alcohol intake had a strong interactive effect on the risk of carcinoma (6,7).**

- There is no association between any type of cardiac or gastric cancer and *snus* use. By contrast, active smokers have a higher risk of gastric or cardiac cancers than never-smokers (8).
- Gastric cardia adenocarcinoma is associated with smoking among heavy smokers but not with alcohol or *snus* use. Oesophageal squamous-cell carcinoma is strongly associated with smoking, moderately with alcohol, but not with *snus* use (9).
- No increased cancer mortality was found among *snus* users in a large co-hort study on Swedish construction workers (10).

Cardiovascular diseases

The use of *snus* appears to be unrelated to the incidence of myocardial infarction, but there is conflicting evidence on the role of *snus* on mortality from cardiovascular disease.

The key findings are:

- *Snus* usage is associated with lower risk of myocardial infarction than cigarette smoking in middle-aged men (11).
- The risk of myocardial infarction is not increased in *snus* users. Nicotine is probably not an important contributor to ischemic heart disease in smokers (12).
- An excess risk of dying of cardiovascular disease has been observed among *snus* users in a co-hort study comprising Swedish construction workers (10). However, the survey included no adjustment for alcohol consumption – a positive co-variation has been demonstrated between use of alcohol and *snus* and it has been contended that this plays an important part in the interpretation of epidemiological studies (13).
- No significant elevation of diastolic blood pressure, haemoglobin concentrations, white cell count, serum cholesterol or triglyceride levels has been found in *snus* users. This is in contrast with findings for cigarette smokers. The use of *snus* by young men appears to have less impact than smoking on cardiovascular risk factors with the possible exception of elevated serum insulin and plasma fibrinogen levels (14).
- The use of *snus* does not appear to affect potential cardiovascular risk factors measured as plasma fibrinogen levels, fibrinolytic activity, glucose tolerance and serum insulin levels (15).
- An increased cardiovascular risk on use of *snus* was observed in a large co-hort study (16).
- *Snus* users do not significantly differ from nonusers with respect to atherogenic risk factors such as increased levels of serum lipids, fibrinogen, blood glucose and blood cell count (17).

These data relate only to Swedish *snus*. The types of oral tobacco favoured, for example, in the Asian sub-continent, have different health risk profiles probably due to different product composition with high levels of undesired constituents and to different usage patterns. It is noteworthy that the current EU ban on the sale of smokeless tobacco products is based on a definition that does not take into account the widely different health risks that are associated with different oral tobacco products.

Snus and the Framework Convention on Tobacco Control

On several recent conferences on tobacco related health issues, the differences in health effects of different tobacco products have been recognised. Some scientists have now included *snus* as one possible "alternative nicotine delivery system" in the reduction of cigarette smoking. They conclude that an efficient smoking cessation strategy must include less harmful substitutes for cigarette smoking (18).

Swedish Match would welcome that the FCTC Intergovernmental negotiating body discusses the status of *snus* and reviews all tobacco products based on independent, scientific evidence of the health risks. We would like to stress once again the role *snus* can play in harm reduction strategies, as has been demonstrated by Swedish studies. We also believe that *snus* can play a useful role in WHO's strategy to reduce cigarette smoking by providing a viable alternative to cigarettes. As stated earlier, Sweden is the first country in the world to have reached the WHO's target of less than 20 % of the adult population being daily cigarette smokers. The presence of *snus* in Sweden has clearly played an important role in that context.

Therefore, it is our belief that *snus* could play a valuable part in encouraging cigarette smokers to switch to a less harmful product also in other countries. This view is shared by, among others, the senior lawyer of the Canadian Smoking and Health Action Foundation, who has reviewed existing law, nicotine delivery systems and current scientific knowledge on nicotine. The review states that support is growing for the proposal that tobacco-related health risks may be reduced by switching existing smokers to less harmful nicotine-containing products. In this review Swedish *snus*, specifically, is mentioned as much less harmful than cigarettes (19).

The WHO Framework Convention on Tobacco Control must recognise that tobacco is not one but several different product categories and each one of them must be judged on its own records. It is our strong belief that when evaluating the available evidence on its own merits, *snus* will appear more as a solution than as part of the problem.

Swedish Match would welcome any further opportunity to discuss the role of *snus* in a global tobacco harm reduction strategy.

References:

1. Holm, H., Jarvis, M.J., Russell, M.A.H., Feyerabend, C. 1992. Nicotine intake and dependence in Swedish snuff takers. *Psychopharm.* **108**: 507-511.
2. Andersson, G., Axell, T., Curvall, M. 1995. Reduction in nicotine intake and oral mucosal changes among users of Swedish oral moist snuff after switching to a low-nicotine product. *J. Oral Pathol. Med.* **24**: 244-250.
3. Andersson, G., Vala E.K., Curvall, M. 1997. The influence of cigarette consumption and smoking machine yields of tar and nicotine on the nicotine uptake and oral mucosal lesions in smokers. *J. Oral Pathol. Med.* **26**: 117-123.
4. Andersson, G. and Axell, T. 1989. Clinical appearance of lesions associated with the use of loose and portion-bag packed Swedish moist snuff: A comparative study. *J. Oral Pathol. Med.* **18**: 2-7.
5. Ahlbom, A., Olsson, U.A., Pershagen, G. 1997. Health hazards of moist snuff. *National Board of Health and Welfare, Sweden.* **11**: 1-30.
6. Lewin, F., Norell, S.E., Johansson, H., Gustavsson, P., Wennerberg, J., Björklund, A., Rutqvist, L-E. 1998. Smoking tobacco, oral snuff, and alcohol in the etiology of squamous cell carcinoma of the head and neck. *Cancer* **82**: 1367-1375.
7. Schildt, E-B., Eriksson, M., Hårdell, L., Magnuson, A. 1998. Oral snuff, smoking habits

- and alcohol consumption in relation to oral cancer in a Swedish case-control study. *Int. J. Cancer* **77**: 341-346.
8. Ye, W., Ekström, A. M., Hansson, L-E., Bergström, R., Nyrén, O. 1999. Tobacco, alcohol and the risk of gastric cancer by sub-site and histologic type. *Int. J. Cancer* **83**: 223-229.
 9. Lagergren, J., Bergström, R., Lindgren, A., Nyrén, O. 2000. The role of tobacco, snuff and alcohol in the aetiology of cancer of the oesophagus and gastric cardia. *Int. J. Cancer* **85**: 340-346.
 10. Bolinder, G., Alfredsson L., Englund A., de Faire U. 1994. Smokeless tobacco use and increased cardiovascular mortality among Swedish construction workers. *Am. J. Public Health* **84**: 399-404.
 11. Huhtasaari, F., Asplund, K., Lundberg, V., Stegmayr, B., Wester, P.O. 1992. Tobacco and myocardial infarction: Is snuff less dangerous than cigarettes? *Brit. Med. J.* **305**: 1252-1256.
 12. Huhtasaari, F., Lundberg, V., Eliasson, M., Janlert, U., Asplund, K. 1999. Smokeless tobacco as a possible risk factor for myocardial infarction: A population-based study in middle-aged men. *J. Am. Coll. Cardiol.* **34**: 1784-1790.
 13. Steen, T. 1996. Health hazards of oral moist snuff. *Tidskr. Nor. Laegeforen.* **116**: 625-627.
 14. Eliasson, M., Lundblad, D., Hägg, E. 1991. Cardiovascular risk factors in young snuff-users and cigarette smokers. *J. Intern. Med.* **230**: 17-22.
 15. Eliasson, M., Asplund, K., Evrin, P.E., Lundblad, D. 1995. Relationship of cigarette smoking and snuff dipping to plasma fibrinogen, fibrinolytic variables and serum insulin. The Northern Sweden MONICA Study. *Atherosclerosis* **113**: 41-53.
 16. Bolinder, G.M., Ahlberg, B.O., Lindell, H.J. 1992. Use of smokeless tobacco: Blood pressure elevation and other health hazards found in a large-scale population survey. *J. Intern. Med.* **232**: 327-334.
 17. Bolinder, G. and de Faire, U. 1995. Metabolic risk factors for coronary heart disease in users of smokeless tobacco. *Tobacco and Health*. Edited by K. Slama, Plenum Press, New York, 509-513.
 18. UN Focal Point on Tobacco or Health. 1997. Social and economic aspects of reduction of tobacco smoking by use of alternative nicotine delivery systems (ANDS), Geneva.
 19. Sweanor, D.T., 1999, Policy Options to Reduce Tobacco-Caused Mortality. *J Addictive Diseases*, **18**: 1-11.