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Previous page : [Cysteine gum may reduce tobacco, alcohol cancer risk](#)

**Cysteine gum may reduce tobacco, alcohol cancer risk**

By Jess Halliday

23/05/2006- **A chewing gum with the amino acid cysteine aimed at reducing the risk of alcohol and tobacco smoking related cancers is expected to launch to market this year, following extensive research at the University of Helsinki.**

The gum, called XyliCyst, is to be introduced by Finnish company Biohit Oyj, which holds the patents to the preparations to use I-cysteine to eliminate the carcinogen acetaldehyde after drinking or smoking.

It is not yet known which markets the gum will be launched in, but a spokesperson for the company said that the plan is for it to be available in mainstream shops, not just pharmacies – although this will depend on individual countries' regulations.

I-cysteine has been understood for many years to have the ability to bind to acetaldehyde, or ethanal, a toxic chemical compound that forms in saliva, especially with alcohol drinking and tobacco smoking.

According to Finnish researchers Professors Mikko Salaspuro and Martti Marvola, epidemiological statistics indicating that 80 per cent of cancers of the mouth, pharynx and oesophagus are linked to smoking and drinking could be explained by increased exposure to acetaldehyde in the upper digestive tract.

According to Cancer Research UK, oesophageal cancer is the ninth most common form of the disease in the UK, almost 7,500 new cases diagnosed every year. In 2002 there were 4,405 new cases of mouth cancer; 32 per cent of mouth cancers are in the oral cavity, and 25 percent in the oropharynx, priform sinus or hypopharynx.

In the 1990s Salaspuro developed the hypothesis that human digestive tract flora generate acetaldehyde when exposed to ethanol.

Asian populations are known to have a gene mutation that renders them deficient in an enzyme responsible for removing acetaldehyde. Salaspuro's team showed that Asians with such a gene mutation have two to three times higher acetaldehyde levels after a small amount of alcohol, compared to people with a normal acetaldehyde-removing enzyme (*Alcohol Clin Exp Res* 2000; 24: 873-877).

Other studies have shown that Japanese heavy drinkers have markedly higher rates of digestive tract cancer compared to other nationalities (*Carcinogenesis* 1998; 19:138301387).

Based on the earlier research, Salaspuro and Marvola set out to develop preparations containing cysteine to eliminate acehaldehyde, and which may help reduce the risk of digestive tract cancers.

Their first two preparations were slow-release cystein tablets, which were subsequently studied for their acehaldehyde-eliminating effects (*Int J Cancer* 97: 361-364 and *Cancer Epid Biomarkers Prev* 2006; 15L146-149)

But Prof Marvola explained to NutraIngredients.com that they went on to develop a method of delivering cystein through chewing gum since it is an easy to use product.

The dosage is likely to be around 5mg of cysteine.

*"We know that with this chewing gum it is possible to eliminate acetaldehyde totally from the saliva during smoking. We do hope that this will in the future turn out to be a novel method for the prevention of alcohol and tobacco associated oral cancers,"* said Professor Salasouro.

He added, though, that long-term randomised controlled trials – currently in the planning stage – would be needed before the preventative effects can be proven.

Moreover the team is developing other cysteine containing products to target different areas of the upper digestive tract, since the acetaldehyde travels down with saliva to the pharynx, oesophagus and stomach.

Moreover, acetaldehyde can be produced in other parts of the digestive system from oral microbes in other foodstuffs – especially those with a high sugar or carbohydrate content.

*"The goal is to develop new products releasing cysteine slowly in different parts of the gastrointestinal tract by which acetaldehyde can be eliminated not only in the mouth, but also in the stomach and maybe also in the large intestine,"* said the researchers.

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