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Contact: Dr Marina Murphy
Marina_murphy@bat.com
+44(0)7711150135
[British American Tobacco](#)

Reducing Smokers' Exposure to Cigarette Smoke Toxicants – Our first clinical study results

25 March 2013, We have shown in our first clinical study of our novel prototype cigarettes that it is possible to reduce smokers' exposure to certain smoke toxicants.

The only way to be certain of avoiding the risks of smoking is not to smoke. And reducing the health risks of smoking has been the overriding aim of tobacco research for many years. It is known that the risk of developing smoking-related disease is greater in people who smoke more cigarettes per day and for longer periods.

We have spent several decades researching the nature of tobacco smoke, identifying key toxicants and developing technologies to reduce the levels of some toxicants in smoke. Laboratory tests show that our technologies successfully reduce levels of some, though not all, toxicants in smoke. This is our first clinical study of our test products and it shows an average reduction in smokers' exposure to certain toxicants over the study period.

“There are already tobacco and nicotine products available, such as snus and e-cigarettes, that are known to pose substantially lower risk than cigarettes. And we don't know whether it will be possible to scientifically prove that reduced toxicant cigarettes reduce health risks,” said Dr David O'Reilly, Group Scientific Director at British American Tobacco. ‘But,’ he said, ‘we believe reducing smokers' exposure to cigarette smoke toxicants continues to be an important research objective, given the numbers of people who smoke and the numbers who are likely to continue to smoke for the foreseeable future.’

‘Many more scientific studies and tests, some of which are still being developed, will be required to determine whether the use of these technologies is likely to result in products posing lower health risks. In the meantime, and in the absence of sufficient scientific proof, we need to engage with the external regulatory and scientific communities to determine if and how toxicant-reducing technologies should be applied to existing commercial products and how this can be supported by regulation,’ he said.

The prototype cigarettes incorporate several toxicant-reducing technologies: two related to the tobacco and two in the filter. A tobacco-processing technique employs an enzyme to remove proteins and polyphenols that become toxicants when burned. An inert tobacco substitute containing calcium carbonate and glycerol was also added, which dilutes the smoke.

The filter technologies include a resin that filters out aldehydes produced as a result of burning sugars in the tobacco and a novel activated carbon with an internal nanostructure optimised for trapping certain volatile smoke toxicants.

We have combined these technologies in three different test cigarettes and demonstrated using smoking machines in the lab that all three test cigarettes substantially reduced levels of certain toxicants compared with conventional cigarettes.

A six-week single-centre, single-blinded, randomised controlled switching study (Trial Registration Number, ISRCTN72157335) with occasional clinical confinement was conducted in Germany. A total of 300 healthy adult subjects were recruited into the study, 250 smokers and 50 non-smokers. The latter acted as a comparison group to determine exposure to some of the studied toxicants that stem from dietary and environmental sources.

Recruited smokers were randomly assigned to a control or test group, with approximately 50 per group. All smokers smoked a control product for two weeks and at day 14 baseline measurements were made. Control group smokers continued to smoke the control product for a further four weeks, while test group smokers were switched to a test cigarette for four weeks. In each case, urine and saliva samples were taken and measurements were made of certain chemical compounds called biomarkers of exposure. They can be the toxicants themselves or their metabolites.

Generally, the higher the levels found in urine and saliva, the greater the exposure to the toxicant, depending on individual metabolic differences. The non-smoker group provided an indication of background levels of biomarkers. These measurements were made at two and four weeks from the switch.

The results show that in comparison with smokers of conventional cigarettes, those who switched to the test products had statistically significant reductions in exposure to certain toxicants. All test cigarettes were successful in reducing vapour-phase toxicants such as acrolein and 1,3-butadiene, and the reductions in exposure were greater and sometimes much greater than 50 per cent. The test product containing the enzyme-treated tobacco was associated with a statistically significant reduction in tobacco-specific nitrosamines of around 90 per cent, as well as a significant reduction in exposure to the carcinogens 3- and 4-aminobiphenyl of around 40 per cent.

'In conclusion, this study showed that smokers switched to test cigarettes with reduced levels of certain toxicants in lab tests did get correspondingly reduced exposures,' says Dr Chris Proctor, Chief Scientific Officer. 'However, not all toxicants were reduced, and we do not yet know what level of reduction will be required to give a meaningful reduction in health risk. But these results provide the impetus for us to conduct additional further longer-term studies and to develop biomarkers more relevant to biological effects.'

The results are published in the journal *Regulatory Toxicology and Pharmacology* (doi:10.1016/j.yrtph.2013.02.007)

Notes to Editors

About British American Tobacco: British American Tobacco is the world's second largest stockmarket-listed tobacco group by global market share, with brands sold in over 180 markets and employing over 60,000 people. Leading global brands include Dunhill, Kent, Pall Mall and Lucky Strike.

About Tobacco Harm Reduction: The only way to avoid the risks associated with tobacco use is not to consume tobacco at all, and the best way to reduce the risks is to stop using tobacco. However, the concept of harm reduction is increasingly being considered in relation to tobacco use and it is a key element of our business strategy and is being discussed by some regulators. Harm reduction is about finding practical ways to minimise the health impact of an inherently risky activity or behaviour, without seeking to stop it entirely. An example of harm reduction in action is the use of seat belts and airbags in cars. We think it's important to work towards producing consumer-acceptable, potentially reduced risk products. We believe that tobacco regulatory policies should include harm reduction approaches for the millions of adults globally who will continue to consume tobacco products.