

Studies of the Elution of Nicotine  
from Tobacco at Room Temperature.

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Literature reports of elution, the pick-up of semi-volatile compounds from a substrate when cigarette smoke is passed over it, have shown that the passage of cigarette smoke over nicotine bearing filters can bring about significant transfer of nicotine at temperatures close to ambient. In order to develop a deeper understanding of the mechanisms responsible for the delivery of nicotine from burning cigarettes, the ability of cigarette smoke to elute nicotine from tobacco at room temperature has been examined. Using smoke from burning Virginia cigarettes to transfer nicotine from US blended tobacco, measurements have been made of the elution of nicotine intrinsic to the tobacco, smoke nicotine deposited onto the tobacco, and free-base nicotine added to the tobacco. The results of these experiments show that tobacco is a poor substrate from which to elute nicotine at ambient temperatures and consequently the contribution of elution to the total delivery of nicotine from a burning cigarette is small. Experiments were also carried out in which the physical and chemical characteristics of the tobacco were modified in order to enhance the yields of eluted nicotine. Variation of the tobacco moisture content showed that elution was hindered by high tobacco moisture contents. Treatment of the tobacco with strong acids and bases produced increased levels of elution at high tobacco pH values.

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