

The effects of a reduced draw resistance cigarette on human smoking parameters and alveolar CO levels.

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I.T. Products Ltd., (Montreal) R & D report no 157

18 January 1978

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When smokers switched to a cigarette of 30% reduced draw resistance, an apparent increase in puff velocity resulted from puffs of shorter duration but of greater effort being taken. With a relative volume increase of less than 10%, the smokers significantly increased mouth nicotine intake by 56%. Although a similar increase in CO delivery would have been expected to be delivered to the mouth, the smokers were consistently noted to have alveolar resting CO levels 16% lower than with their normal cigarette. It is therefore apparent that the increased availability of nicotine to the smoker caused a decrease in the depth of inhalation. Rather surprisingly there appeared to be no adjustment in total daily cigarette consumption, butt length or puff number, as has been reported in other studies which have used these parameters as indicative of nicotine regulation.

It is felt that the alveolar resting levels of CO can be used as an indicator of depth of inhalation and, without such data, other smoking parameters may be most misleading.

The result of decreasing cigarette draw resistance, while maintaining nicotine delivery may be an effective means of reducing body CO levels; however the implications of such a cigarette design on delivery of other smoke components would require further study.

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The effects of nicotine enhanced cigarettes on human smoking parameters and alveolar CO levels.  
DUBIN, P.J., FREYSLEBEN, E.R.  
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The capacity of nicotine enhanced cigarettes to affect mannerisms of human smoking as well as depths of inhalation was studied. Four cigarette smokers were monitored, over a 5 day period, for their alveolar CO levels and smoking patterns with their normal cigarette and also with a cigarette equivalent in all respects except for a 30% increase in smoke nicotine yield. The smokers did not compensate for the 30% nicotine increase by significantly altering butt length, puff number or puff duration. In addition only small differences were noted in puffing effort and relative total volume of smoke obtained. There was an average decrease of 27% ( $p > .95$ ) in resting alveolar CO concentrations with this new cigarette, with no decrease in total daily cigarette consumption. Although no nicotine regulation was apparent from mouth nicotine results, these lower alveolar CO levels indicate a lesser degree of inhalation with the nicotine enhanced product. This supports the hypothesis that body CO levels are influenced by the level of available nicotine in the smoking product, and thus questions the use of standard CO deliveries alone to predict body CO levels. The greater availability of nicotine to the smoker may be an effective means of controlling the intake of CO and tar.

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