EDITORIALS

It's Time for a Change: Cigarette Smokers Deserve Meaningful Information About Their Cigarettes

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The study by Djordjevic et al. *(1)* in this issue of the Journal elegantly demonstrates that the Federal Trade Commission (FTC) method of testing cigarettes for tar and nicotine provides tobacco companies the opportunity to mislead their customers. The study provides fresh insights as to the means by which human biology and tobacco engineering interact to cause the problem. The article reveals that smokers adjust a variety of their smoking behaviors, such as puff frequency, depth of inhalation, and ventilation hole blocking, thereby ingesting high levels of nicotine and tar irrespective of the advertised yields of the cigarettes. Moreover, the results show that cigarettes branded as "lights" can provide deliveries of tar and nicotine that are similar to those of the regular versions. It is highly unlikely that the small differences in tar and nicotine deliveries found across brands have any toxicologic significance.

A few observations about the FTC method may help to understand the importance of the study by Dordjevic et al. as well as its implications for regulatory actions. The FTC method was actually adapted from methods developed and used by the tobacco industry in the 1930s as a means of objectively comparing cigarettes for developmental and manufacturing purposes *(2)*. The FTC's intent was to bring order to the chaotic tar-derby advertising claims of health benefit in the 1960s. Furthermore, the FTC method was intended to provide the basis for advertising that could enable consumers to select cigarette brands on the basis of tar and nicotine yields. As reported by C. L. Peeler, Associate Director, FTC, the latter goal was consistent with the conclusions of the 1964 Surgeon General's Report that urged that smokers who were unable to quit should make every effort to reduce their dose of tobacco smoke *(3)*. This recommendation flowed from a robust scientific literature that demonstrated a dose–response relationship between tar exposure and cancer risk *(3)*. Numerous studies *(4,5)* have since reconfirmed the dose–response relationship, even though it is also more clear than ever before that tobacco smoke is so toxic that there appears to be no safe level of smoke exposure.

In response to the public health literature, in 1970, the FTC proposed rules that would have required disclosure of tar and nicotine yields in advertising. But, to avoid regulation, the major cigarette manufacturers agreed to voluntarily place FTC tar and nicotine ratings in advertising *(3)*. In addition, because low tar and nicotine ratings can be an effective selling message, manufacturers often do list the ratings on the packages for those brands in which the tar and nicotine ratings are very low (e.g., <5 mg of tar and <0.5 mg of nicotine) *(6)*.

Thus, in support of the then-current public health thinking, but ultimately unwittingly, the FTC provided the tobacco industry with a very powerful and persuasive selling message in which the industry's own documents show was deliberately used to "reassure smokers" and to provide an alternative to quitting *(7,8)*. As a consequence of human biology, the business interests of the tobacco industry, and a nearly complete absence of accountability by the industry, the FTC's intentions were undermined. The method does not differentiate among cigarettes in a meaningful way.

On the biologic side was the fact that most cigarette smokers become addicted to nicotine. They generally come to require nicotine dosing at levels that are high enough to sustain dependence but not so high as to cause acute noxious effects, i.e., one cigarette every 20–60 minutes *(9,10)*. This leads to the behavioral phenomenon generally termed "compensation," whereby cigarette smokers tend to adjust their smoking behavior to sustain their preferred level of nicotine intake, even when faced with challenges, such as limitations on smoking opportunities, increased cost of cigarettes, and reduced nicotine delivery per puff *(9,11–14)*. The main toxicologic problem of such compensation is not the maintenance of nicotine exposure *per se* but that, along with sustained high levels of smoke intake, come high levels of tar, carbon monoxide, and other toxins. Nonetheless, when people who are motivated to quit or reduce their smoking are given guidance that enables them to gradually reduce their smoke intake (e.g., by behavioral methods of reduction), it appears plausible that reductions could be achieved and sustained and that these might facilitate efforts to quit *(15–17)*.

Tobacco companies do not provide their customers with guidance that could help them avoid compensatory smoking, e.g., avoiding taking extra puffs, deeper inhalations, covering ventilation holes, smoking down to the filter, and smoking more cigarettes *(12)*. In fact, recently disclosed documents make it clear that the interests of tobacco companies in keeping their customers hooked on nicotine led to extensive efforts to design cigarettes to exacerbate the problem by virtually ensuring that compensation would occur, even if the consumer wanted to reduce his or her tar and nicotine intake *(7,8,18)*. This is termed "elastic dosing potential" by the tobacco industry *(19)*, and this deliberate design feature is what enabled subjects in the study by Djordjevic et al. to achieve such high dosages of tar and nicotine from cigarettes claimed to be low and light.

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See "Notes" following "References."

Many of the elaborate means by which cigarette engineering has been used to ensure that consumers could get much higher levels of tar and nicotine than indicated in their advertising have been documented by the U.S. Food and Drug Administration (FDA) and others *(7,8,18–21)*. The means include use of chemical additives such as ammonia compounds to increase the bioavailability of the nicotine in the tobacco rod itself, burn accelerants that disproportionately reduce available tobacco to relatively slow-puffing machines as compared with faster-puffing humans, and the application of virtually invisible ventilation holes that are not blocked by smoking machines but are frequently, at least partially, blocked by smokers.

Since 1966 when the FTC proposed that cigarettes be tested for tar and nicotine yields, there has been controversy surrounding both the testing methods and the public health implications of the results. Several facts that have implications for regulatory reform are now clear. First, the tobacco market is dominated by cigarettes that readily deliver high levels of tar and nicotine, regardless of their claimed yields and regardless of whether their brand names and advertising indicate that they are "light" or "reduced" in tar and nicotine delivery. Second, the epidemiologic data show that, despite their labeling and advertising, so-called "light" cigarettes are not associated with any important health benefits compared with currently available "regular" or "full-flavor" cigarettes. It is possible, though, that the addition of filters in the 1950s and 1960s did have a small effect to reduce the risk of certain cancers but not heart or other lung diseases *(4,22)*. Third, the present system includes no means of validation, such as by human bioavailability testing, to determine if the results of the machine tests are predictive of human exposure to cigarettes *(23)*. In contrast, the FDA routinely requires human bioavailability testing of drug products, and the agency might plausibly require the same testing of cigarettes.

Finally, even though most smokers do not know the tar/nicotine yield of their cigarettes *(24)* they do know very clearly whether their cigarette brand is "light," "low tar," or "ultra-light." As a consequence of years of exposure to massive and misleading advertising of low-yield products, consumers, especially smokers of low-yield products, believe that such cigarettes are healthier and safer or have less risk *(25)*. In fact, many people have apparently switched to such cigarettes, as was the intent of the tobacco industry *(7,8)*, rather than quit *(25,26)*. The fact that they were misled should not have occurred. Consumers should be able to rely on terms used to denote health benefits. But, unlike FDA-approved descriptors used on food labels, cigarette descriptive terms have not been subjected to a test that demands that they only be used when there is a plausible relationship between the health claim and a health benefit *(23)*. The needs for such oversight are increasing as tobacco companies appear to be accelerating their modification of products and their marketing strategies with claims of "additive-free" cigarettes, reduced levels of cancer-causing toxins, and cigarette substitutes that use electronic igniters and carbon fuel systems to produce nicotine aerosol *(26–29)*.

It is time for a change. Not just for a change in the manner of testing and reporting of tobacco constituents but also in the way that tobacco products are regulated and marketed. To achieve this, the FDA, and not the FTC, should be responsible for setting standards in this area. The FDA would have the authority and expertise necessary to make tobacco product manufacturers accountable for clearly and accurately describing the toxicity and addictiveness of their products to their customers. Furthermore, if at the conclusion of a federally sponsored review of these issues the Department of Health and Human Services[1] finds, as have others, that the current testing regimen misleads consumers and that so-called low-yield products are no safer than higher yield products, then drastic change is called for immediately, regardless of where jurisdiction lies, and it should be swift and comprehensive.

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NOTES

[1]*Authors' note:* In November 1999, the Federal Trade Commission suspended its attempts to modify the cigarette testing methodology and requested that the Department of Health and Human Services look at the entire question of the public health risks and benefits of low-yield cigarettes and recommend whatever changes are necessary, including abandoning the testing system if appropriate.

Editor's note: The authors are members of the Committee on Tobacco Product Change, an *ad hoc* committee that was established to provide a forum for evaluating the consequences of tobacco product change and developing recommendations for tobacco product policy. It received a small unrestricted administrative start-up grant from SmithKline Beecham Consumer Healthcare, Pittsburgh (PA) and is currently administratively supported by the Campaign for Tobacco Free Kids. The Committee is chaired by Judith Wilkenfeld.

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