

Chapter 6

Effects of menthol on disease risks of
smoking: topography, toxicology;
biomarkers, and epidemiology

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And

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Questions Addressed

6. Do biomarker studies indicate that smokers of menthol cigarettes receive greater doses of harmful agents per cigarette smoked, in comparison with smokers of non-menthol cigarettes?
7. Do smokers of menthol cigarettes have increased risk for diseases caused by smoking in comparison with smokers of non-menthol cigarettes?

Topics Covered

- Topography
- Biomarkers
- Toxicology
- Epidemiology

Search Strategies

- Literature searches
- FDA “White Papers”
- Public submissions

Topography: Studies Identified

- 11 studies identified
- Eight studies reported effects of menthol smoking on number of puffs or puff volume
- Five studies reported CO levels in relation to type of cigarette smoked

Biomarkers

- Eight published cross-sectional studies and one unpublished tobacco company analysis of a cross-sectional study comparing biomarker levels in smokers of menthol and nonmenthol cigarettes. One published study analyzing the relationship between urine menthol and biomarker levels.
- Various biomarkers: cotinine, nicotine, urine nicotine equivalents, NNAL, COHb, PAHs

Toxicology

- Pending

Epidemiology

- Cancer:
 - Lung cancer: five studies
 - Oropharyngeal, esophageal, non-lung: one each
- Non-cancer outcomes:
 - CVD: two cohort studies
 - Respiratory outcomes: same two cohort studies