

EVIDENCE ON THE CARCINOGENICITY OF Marijuana Smoke

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5.2 Conclusion

There is evidence from some epidemiological studies of marijuana smoke suggestive of increased cancer risk from both direct and parental marijuana smoking. However, this evidence is limited by validity issues and small numbers of studies for most types of cancer.

Direct marijuana smoking has been statistically significantly associated with cancer of the lung, head and neck, bladder, brain, and testis.

Parental marijuana smoking before or during gestation has been statistically significantly associated with childhood cancer.

- Childhood cancers that have been **associated with maternal marijuana smoking are acute myeloid leukemia, neuroblastoma, and rhabdomyosarcoma.**
- Childhood cancers that have been **associated with paternal marijuana smoking are leukemia (all types), infant leukemia (all types), acute lymphoblastic leukemia, acute myeloid leukemia, and rhabdomyosarcoma.**

In animal studies, increases in squamous cell papilloma of the skin were reported in mice exposed dermally to marijuana smoke condensate. **Malignant mesenchymatous tumors were reported following six subcutaneous injections of marijuana smoke condensate to newborn rats.**

In a marijuana smoke inhalation study in female rats, benign tumors of the ovary and **benign and malignant tumors of the uterus were observed.**

There is evidence that **marijuana smoke is genotoxic, immunosuppressive, and can alter endocrine function.** Studies of $\Delta 9$ -THC and other cannabinoids provide evidence for alterations of multiple cell signaling pathways, in endocrine function, and suppression of the innate and adaptive immune response. **Prolonged exposures to marijuana smoke in animals and humans cause proliferative and inflammatory lesions in the lung.**

Marijuana smoke and tobacco smoke share many characteristics with regard to chemical composition and toxicological activity. Tobacco smoke is a Proposition 65 carcinogen, and **at least 33 individual constituents present in both marijuana smoke and tobacco smoke are Proposition 65 carcinogens.**