

MAPS/NORML Study Shows Vaporizers Reduce Toxins in Marijuana Smoke

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Medical marijuana patients may be able to protect themselves from harmful toxins in marijuana smoke by inhaling their medicine using an electric vaporizer, according to initial results of a study by the Multidisciplinary Association for Psychedelic Studies (MAPS) and California NORML. Research expenditures to date are roughly \$50,000.

The study showed that it is possible to vaporize medically active tetrahydrocannabinol (THC) by heating marijuana to a temperature short of the point of combustion, thereby eliminating or substantially reducing potentially harmful smoke toxins that are normally present in marijuana smoke. Vaporizers may therefore substantially reduce what is widely regarded as the leading health concern associated with marijuana, namely respiratory harm due to smoking. In addition, many medical marijuana patients say they prefer vaporizers because they deliver smoother, less irritating medication.

MAPS and NORML sponsored the study in the hopes of helping medical marijuana patients and others reduce the health risks of smoking marijuana. A major obstacle to approval of natural cannabis by the Institute of Medicine (IOM) in its 1999 report, “Marijuana and Medicine,” was that smoking is an “unhealthy” delivery method. The IOM report failed to note the possibility of vaporization.

The MAPS-NORML study tested a device called the M1 Volatizer(R), an aromatherapy vaporizer developed by Alternative Delivery Systems, Inc. It consisted of an electric heating element in a chamber that radiates heat downwards over a sample of marijuana contained in a standard bowl. Output from the vaporizer was analyzed and compared to smoke produced by burning the sample.

The vaporizer produced THC at a temperature of 200° C. (392° F.) while completely eliminating three measured toxins - benzene, a known carcinogen, plus toluene and naphthalene. Temperatures of around 200 C. appear to be most efficient for vaporization. The potency of the cannabis in the study was on the order of 10% - 12%. Significant amounts of THC (around 5%-6%) begin to be released at 180 C., with slightly more (7% or 8%) at 200 C. Carbon monoxide and smoke tars were both qualitatively reduced by the vaporizer, but additional testing is needed to quantify the extent of the decrease.

The vaporizer study was undertaken as a follow-up to a previous MAPS-NORML marijuana smoking device study, which concluded that vaporizers offered the best prospects for smoke harm reduction: www.maps.org/news-letters/v06n3/06359mj1.html

MAPS and NORML are currently seeking support for further research and development of vaporizers. Research is presently underway to explore the optimal temperature and conditions for vaporization. An additional \$85,000 is needed to provide accurate measurement of carbon monoxide and other toxins, such as polycyclic aromatic hydrocarbons. Further studies may be needed to explore alternative device designs and the effects of different consistencies, potencies and preparation methods of the samples of marijuana.