



Evaluating the impact of hemp food consumption on workplace drug tests.

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Foods containing seeds or oil of the hemp plant (*Cannabis sativa* L.) are increasingly found in retail stores in the U.S. The presence of delta9-tetrahydrocannabinol (THC) in these foods has raised concern over their impact on the results of workplace drug tests for marijuana. Previous studies have shown that eating hemp foods can cause screening and confirmed positive results in urine specimens. This study evaluated the impact of extended daily ingestion of THC via hemp oil on urine levels of its metabolite 11-nor-9-carboxy-delta9-tetrahydrocannabinol (THC-COOH) for four distinct daily THC doses. Doses were representative of THC levels now commonly found in hemp seed products and a range of conceivable daily consumption rates. Fifteen THC-naive adults ingested, over four successive 10-day periods, single daily THC doses ranging from 0.09 to 0.6 mg. Subjects self-administered THC in 15-mL aliquots (20 mL for the 0.6-mg dose) of four different blends of hemp and canola oils. Urine specimens were collected prior to the first ingestion of oil, on days 9 and 10 of each of the four study periods, and 1 and 3 days after the last ingestion. All specimens were screened for cannabinoids by radioimmunoassay (Immunalysis Direct RIA Kit), confirmed for THC-COOH by gas chromatography-mass spectrometry (GC-MS), and analyzed for creatinine to identify dilute specimens. None of the subjects who ingested daily doses of 0.45 mg of THC screened positive at the 50-ng/mL cutoff. At a daily THC dose of 0.6 mg, one specimen screened positive. The highest THC-COOH level found by GC-MS in any of the specimens was 5.2 ng/mL, well below the 15-ng/mL confirmation cutoff used in federal drug testing programs. A THC intake of 0.6 mg/day is equivalent to the consumption of approximately 125 mL of hemp oil containing 5 microg/g of THC or 300 g of hulled seeds at 2 microg/g. These THC concentrations are now typical in Canadian hemp seed products. Based on our findings, these concentrations appear to be sufficiently low to prevent confirmed positives from the extended and extensive consumption of hemp foods.

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