Use of X-ray irradiation for inactivation of Aspergillus in cannabis flower

Safe cannabis consumption with Photonic Decontamination

Presented by : Jeff Duvall



INTRO

Cannabis sativa L. plants with its condensed, highly-branched large inflorescences play hosts to number of microorganisms, including bacteria and fungi that could be harmful if ingested or inhaled

Smoking, vaping or inhaling contaminated cannabis can lead to life-threatening systemic fungal infections

Aspergillosis is a disease caused by the common mold Aspergillus

METHODS

Samples were pre-treated with pre-determined dose of 2.5 kGy of X-ray irradiation to inactivate any naturally occurring Aspergillus. X-ray irradiation was applied using a Rad Source 420M (Rad Source Technologies Inc., Buford, GA) which was operated according to manufacturer's instructions. Samples were then spiked with Aspergillus spores

RESULTS

Ionizing radiation inactivates microorganisms and other living cells either as a direct action of the radiation or indirectly with the radiolysis of cellular water to form highly damaging free radicals



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X-ray irradiation at a dose of 2.5 kGy is capable of rendering Aspergillus cells non-viable at low, medium and high levels of inoculation









No significant trends were observed for THCA and delta9-THC concentrations

X-ray irradiation with quantitative spike levels

PCR detection and viability of various Aspergillus spp. after X-ray irradiation.

	2.0 kGv	2.5 kGv	5.0 kGv
Aspergillus			
niger	NG	NG	NG
Aspergillus			
fumigatus	G	NG	NG
Aspergillus			
flavus	G	NG	NG
Aspergillus			
terreus	NG	NG	NG

G: Aspergillus growth observed on PDA plates NG: No Aspergillus growth on PDA plates

RESEARCH REFERENCES

Stephen Frink, Olivera Marjanovic, Phoi Tran, Yun Wang, Weihong Guo, Noahie Encarnacion, Donelle Alcantara, Bahman Moezzi, Gordon Vrdoljak 1 Cannabis Testing Laboratory Branch, California Department of Cannabis Control, Richmond, California 2 Food and Drug Laboratory Branch, California Department of Public Health, Richmond, California gordon.vrdoljak@cannabis.ca.gov (GV); olivera.marjanovic@cannabis.ca.gov (OM)

