From: Langara | Applied Research Center
To: Paulo Sgarbi
Cc: Applied Research
Subject: Thank you for submitting your ARC Final Report
Date: Tuesday, April 8, 2025 1:06:21 PM

EXTERNAL: Do not interact, click on links, or download any attachments if the sender is unknown.

Thank you for submitting

ARC Final Report

Our team may reach out to you with follow-up requests for clarification regarding your submission.

Review your submission responses below:

Researcher First Name: Paulo

Researcher Last Name: Sgarbi

Department: Chemistry

Other Department:

Project Title: Investigations on the Effects of Ozone on the Potency of Cannabis

Start semester: 9/2/2024

End Semester: 12/20/2024

Introduction - Please introduce yourself and include pertinent background information as it relates to your project's research area. My name is Dr. Paulo Sgarbi, currently an instructor at the Department of Chemistry

(Langara College). Cannabis plants have hundreds of bioactive components; medicinal (and recreational) Cannabis posses a higher concentration of cannabinoids. Currently, our community partner, Pure Sunfarms (PSF), sterilizes the Cannabis flowers through irradiation (Gamma-rays). With an interest in reducing costs and doing the sterilization in house, PSF look into ozone as an alternative to irradiation. However, ozone is a powerful oxidizing agent, and many cannabinoids and terpenes contain functional groups that are sensitive to ozone. The aim of this research project is to probe how ozone affects the potency (that is, cannabinoid concentration) of Cannabis flowers.

Please discuss your educational background and your work experience as it relates to this project. If possible, include a quote that helps define your interest in the project. I have a Master's Degree in Organic Chemistry, a PhD in Organic Synthesis and post-doctoral and professional experience in medicinal chemistry. I currently teach courses in Organic Chemistry and Molecular Modelling. I have carried out a large variety of chemical reactions during my training period as a scientist and during my tenure in industry. As part of my post-doctoral training and industry work, performing chemical reactions and obtaining data such as biological activity was commonplace. Many aspects of this project fall within my area of expertise.

Please summarize your project in plain language that others not in your field could understand. The project can be summarized as a question: "Does ozone kills the Cannabis buzz?"

Identify the project goals and objectives. Explain how the results may be used to solve a problem or inform further research in the field. As explained above, the aim of this research project is to probe how ozone affects the potency (that is, cannabinoid concentration) of Cannabis flowers. If it can be demonstrated that ozone does not significantly affect potency - and, additionally, by identifying ozone concentration that does affect potency, the costly irradiation process could be substituted by a more economical in-house ozonation procedure.

Briefly explain the steps taken (methods used) to conduct the research, and describe the key findings. While the main portion of the project is completed, there may be a need for further high scale ozonation to complete microbiological tests. Other future goals are listed on the report below, submitted to SPF

Who was involved in this project (eg. faculty, students, community partners)? How did their involvement contribute to the project's success? Were there any challenges to overcome? The project involved faculty (Dr. Paulo Sgarbi), two undergraduate students, two Applied Research Centre research associates, who carried out the HPLC analysis, and Sunpure Farms (SPF), who provided the samples. Thanks to the hard work of these researchers and the commitment of SPF, we were able to obtain meaningful results in a relatively short time. There were no significant challenges: once the group found a good work rhythm, everything moved quite smoothly.

Please share any personal stories that made this research experience memorable/valuable.
I believe the students involved greatly benefitted from the experience, and I enjoyed interacting with them.

What are the next steps for this project and for you as a researcher?
Both whole and in-house milled Cannabis flowers

("buds") were used. The buds were subjected to increasing concentrations of ozone in an ozone chamber, for either one hour or four hours (the time frames were selected based on availability to carry the work). Ozone was produced by ozonizing oxygen in dry air using the electrical discharge method. Samples were processed according to an internal SOP and analyzed by HPLC. It was determined that ozone did not affect the potency of Cannabis up to about 40 ppm. Milled samples subjected to >70 ppm for 4 hours had the potency significantly reduced. An ozonized sample (~27 ppm, 1 h, 30 gram) was produced and sent for microbiological testing. Results are still pending.

Please upload any images that will help to showcase your project.

By submitting, I consent to uploading my ARC Fund final report to the Langara Institutional Repository (The LaIR). True

By submitting this form, you're consenting to receive communications from Langara College and agreeing to Langara's privacy policy statement. You may unsubscribe at any time. (1) Consent

Connect with us!

Langara.ca/AppliedResearch | LinkedIn

Copyright © 2024. All rights reserved.
Langara College | 100 49th Ave W, Vancouver BC V5Y2Z6

Privacy Policy