

# Project Myos

## Human Pk And Inflammatory Study

### MICROENCAPSULATION OF CANNABINOIDS

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Plant  
Based



Vegan



Clean

Study  
Location

St. Vincent's Private Clinical  
Hospital, Dublin, Ireland

Principal  
Investigator

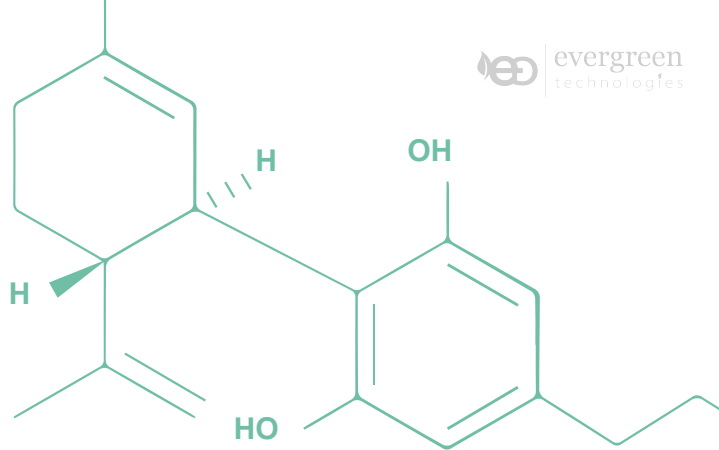
Prof. C. Le Roux

Date

September 2021

# Executive Summary

STUDY RESULTS INCLUDE



3x

Evergreen microencapsulation demonstrated an approx. 3x (2.83x) increase in CBD absorption vs Liposomal delivery

2x

Evergreen microencapsulation demonstrated peak blood levels for CBD to be 2x (1.98x) those seen with Liposomal delivery

90 min

Evergreen microencapsulation demonstrated a slower, more controlled release of CBD into the bloodstream vs Liposomal Delivery (90 minutes vs. 30 minutes)

22%

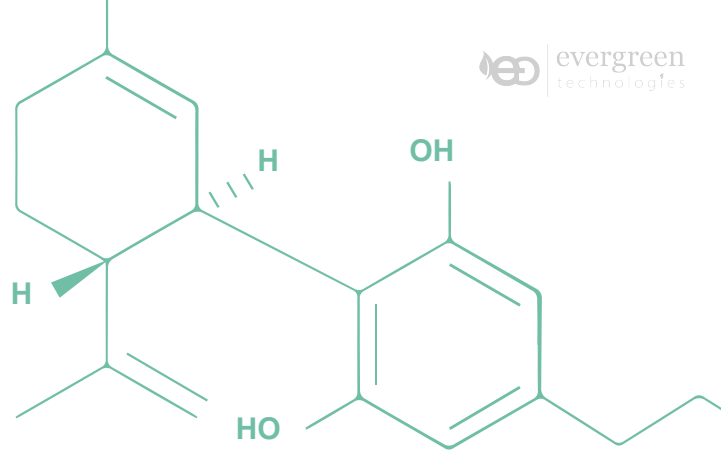
Evergreen microencapsulation lowered ESR values (inflammation and immune-modulatory response measurement) by 22% after 28 days

>14%








Evergreen microencapsulation reduced ESR values >14% better than Liposomal Delivery



# Study Design

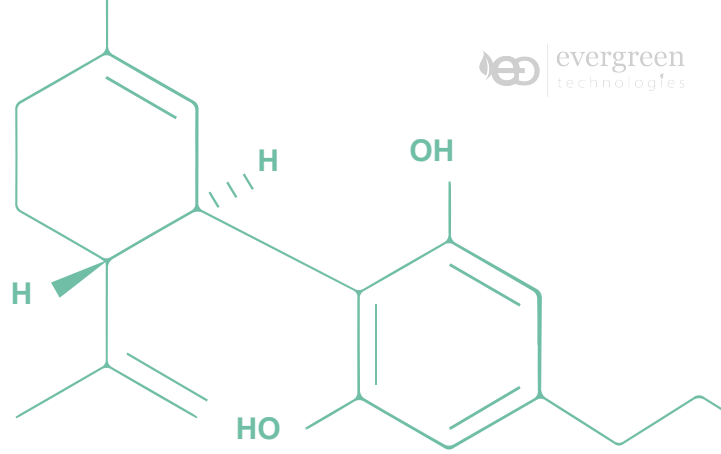


## METHODOLOGIES

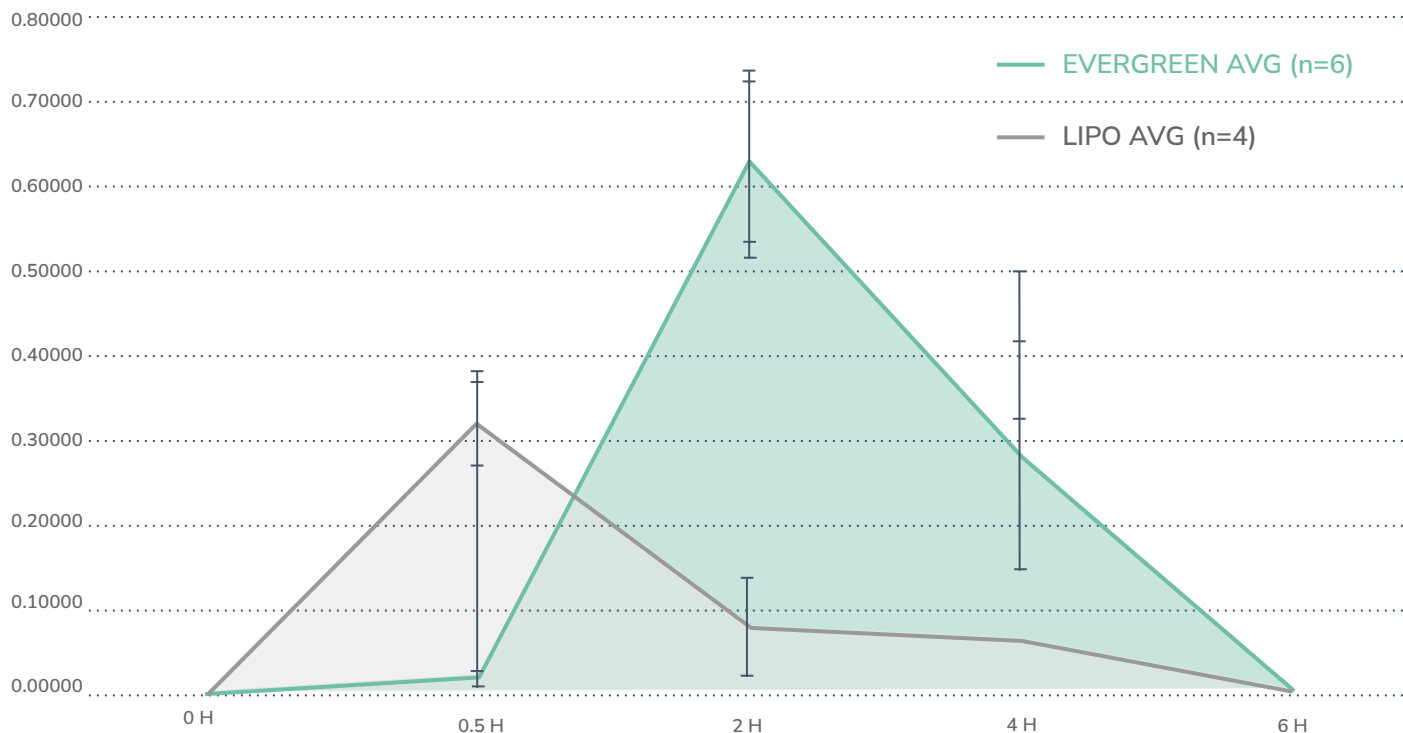
<p><b>SAMPLE SIZE</b></p>	<ul style="list-style-type: none"> <li>Total of 16 people (6+6+4) for PK Study and ESR value testing</li> </ul>	 <p><b>16 PEOPLE</b> PK &amp; ESR Value Testing</p>
<p><b>TYPE OF STUDY</b></p>	<ul style="list-style-type: none"> <li>Single-center, double-blinded randomized study</li> </ul>	 <p><b>SINGLE-CENTER</b> Double-Blinded</p>
<p><b>STUDY OBJECTIVE</b></p>	<ul style="list-style-type: none"> <li>Evaluation of Evergreen microencapsulation for enhanced bioavailability of CBD relative to Liposomal delivery CBD formats</li> <li>Evaluation of ESR values (Inflammation and immunomodulatory measurement) after 28 days of supplementation, and as compared to Liposomal delivery</li> </ul>	 <p><b>EVALUATION</b> Evergreen microencapsulation</p> <p><b>EVALUATION</b> ESR Values after 28 Days</p>
<p><b>AIM</b></p>	<ul style="list-style-type: none"> <li>To demonstrate efficient delivery of microencapsulated cannabinoids, while also validating the protective properties of microencapsulation during transit through the body and subsequent release in the intestine for potential absorption into the blood stream with slow release effects</li> <li>Influence of microencapsulation of cannabinoids on inflammation and immune response in the body</li> </ul>	 <p><b>DEMONSTRATE</b> Efficient delivery of microencapsulated cannabinoids</p> <p><b>INFLUENCE</b> microencapsulation of cannabinoids</p>
<p><b>ENDPOINT</b></p>	<ul style="list-style-type: none"> <li>Appearance of CBD in peripheral blood plasma and ESR value testing. Participants were blinded with regard to intervention or control; all samples are provided in the form of non-descript bottles for consumption</li> </ul>	 <p><b>APPEARANCE</b> of CBD in peripheral blood plasma and ESR value testing</p>
<p><b>SAMPLES</b></p>	<ul style="list-style-type: none"> <li>Blood samples taken on Day 0 at specific time intervals: Time 0, 0.5h, 2h, 4h, 6h after consumption of the test drink ( 10 mg CBD in 500 ml water)</li> <li>Day 28 assessment was conducted thereafter with one timepoint. Each participant would represent their own control (time 0) and participants were randomized</li> </ul>	 <p><b>SAMPLE AT DAY 0</b> Time 0, 0.5h, 2h, 4h, 6h</p> <p><b>SAMPLE AT DAY 0</b> Time 0, 0.5h, 2h, 4h, 6h</p>
<p><b>STUDY POWER &amp; RECRUITMENT</b></p>	<ul style="list-style-type: none"> <li>Based on the proposed design, 17 participants were recruited allowing Evergreen microencapsulation and Liposomal to be compared</li> </ul>	 <p><b>17 PARTICIPANTS</b> Recruited</p>

# Summary of PK Comparison

EVERGREEN VS. LIPOSOMAL



MICROENCAPSULATED CBD (EVERGREEN AVG VS. LIPO AVG)



**30 minutes**

Liposomal CBD - detected in the blood 30 minutes after consumption



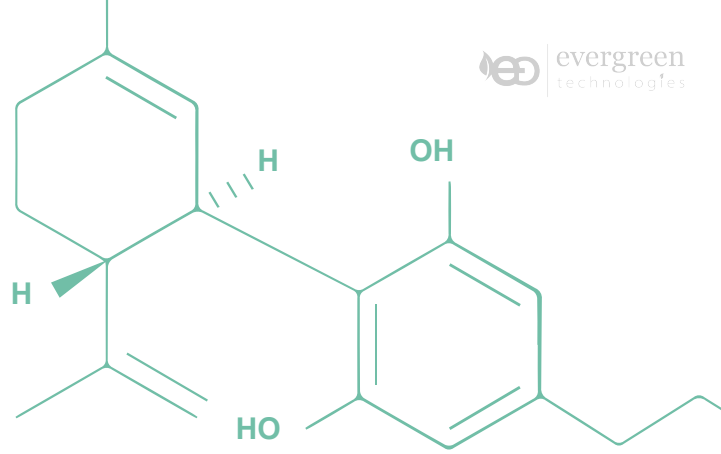
**120 minutes**

Evergreen CBD - detected 120 minutes hours after consumption



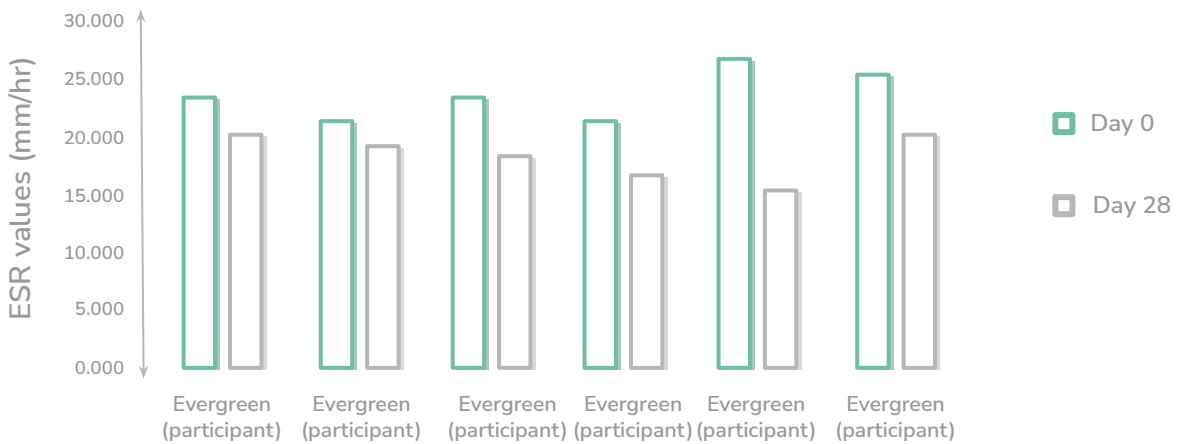
# % Reduction in ESR Values

INFLAMMATORY & IMMUNOMODULATORY MEASUREMENT



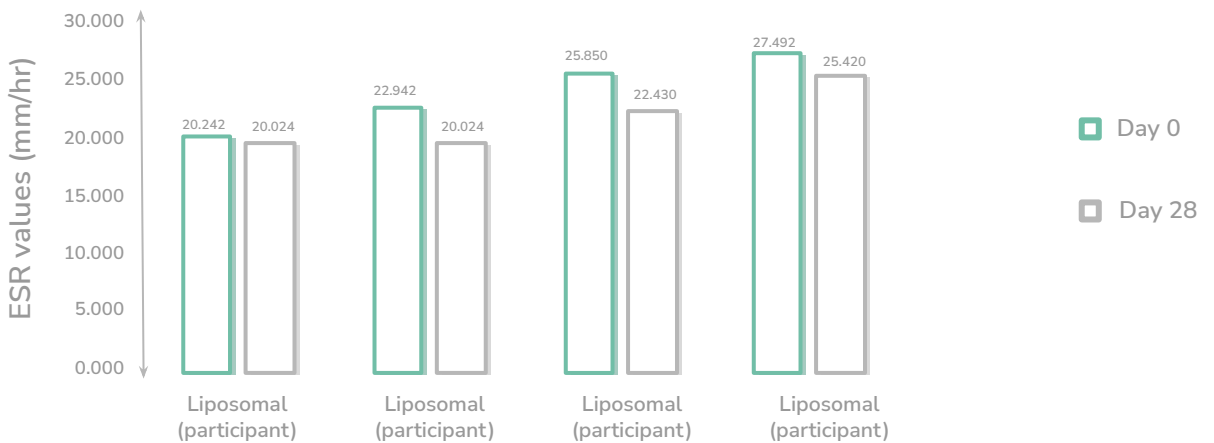
INFLAMMATORY MARKERS - EVERGREEN DELIVERY AS A FUNCTION OF TIME

EVERGREEN



INFLAMMATORY MARKERS - LIPOSOMAL DELIVERY AS A FUNCTION OF TIME

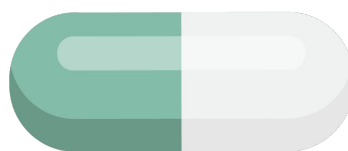
LIPOSOMAL



RESULTS

**Significant Response**

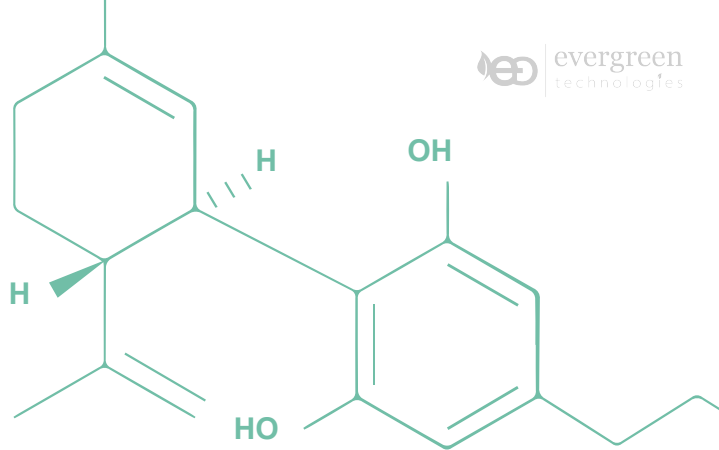
Statistically Significant response is seen with batch Evergreen microencapsulation



**Marginal Effects**

Liposomal formats demonstrates marginal effects

# Study Conclusions

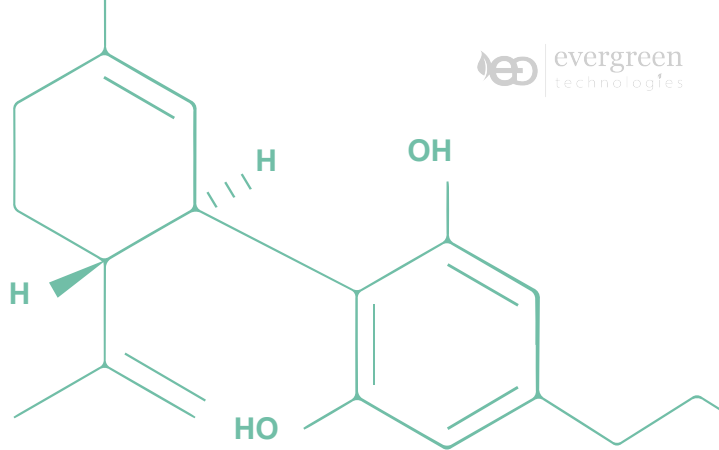


## KEY DATA & RESULTS

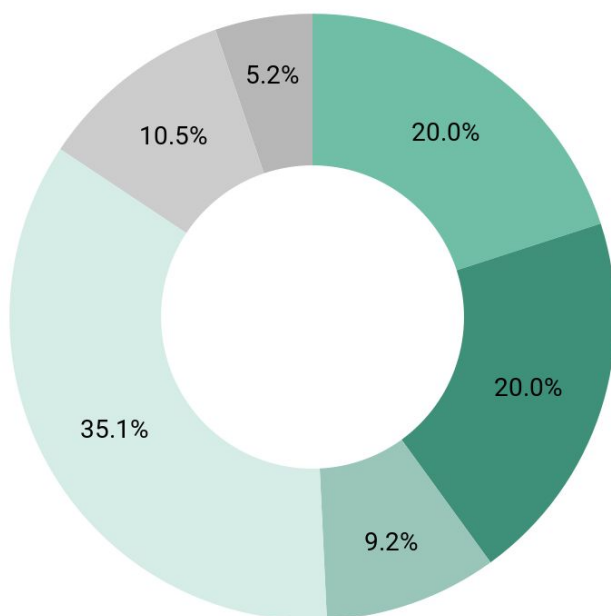
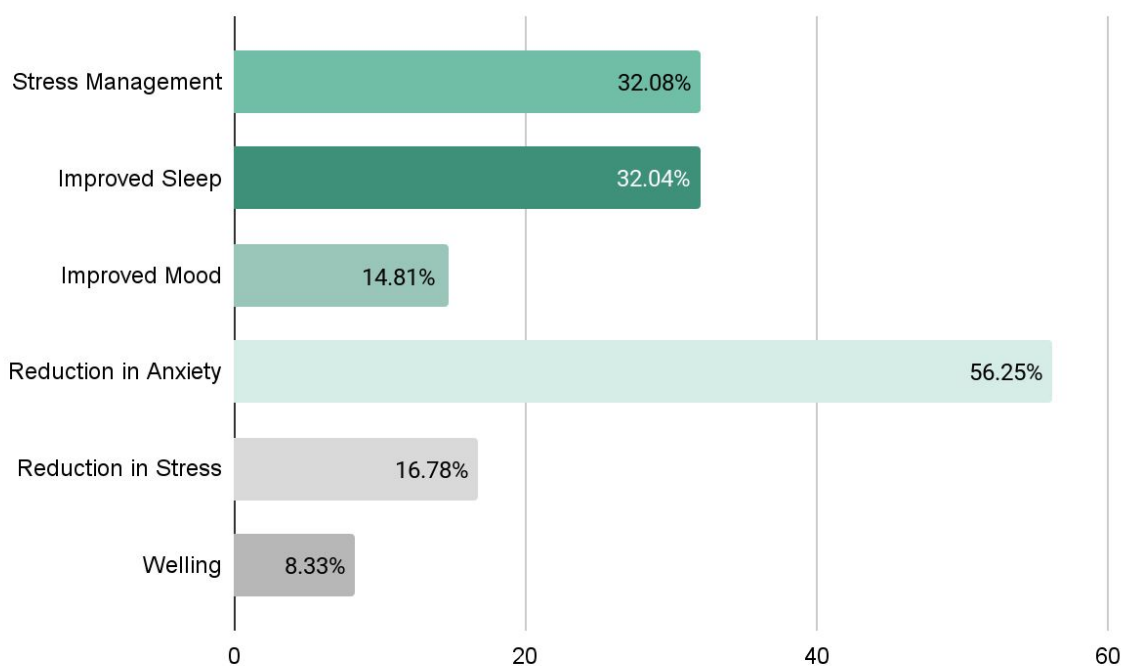
01	Delivery	Evergreen microencapsulation delivers cannabinoids 3x more efficiently than Liposomal delivery
02	Delivery	Evergreen microencapsulation had 2x peak cannabinoid levels than Liposomal delivery
03	Slow Release	Evergreen microencapsulation demonstrates slow release kinetics up to 2 hours after consumption
04	Bioavailability	Evergreen microencapsulation shows > 80% bioavailability
05	Reduced ESR	<p>After 28 days supplementation, the average ESR blood biomarker values were reduced for all subjects.</p> <p>The greatest reduction in ESR values was seen with participants who consumed Evergreen samples (&gt;22%)</p>
06	Inflammatory and Immunomodulatory Response	The inflammatory and immunomodulatory response is least effective with liposomal delivery (>14% less reduction).
07	Regulate Inflammation	The Evergreen microencapsulation has the potential to regulate inflammation through the immunomodulatory properties delivered by CBD.
08	Attenuation	Attenuation of immunomodulatory responses is greatest with Evergreen microencapsulation technology relative to liposomal delivery

# Study Conclusions

## IMPROVEMENT IN WELLNESS



### OVERALL SUMMARY OF FACTORIALS



- Stress Management
- Improved Sleep
- Improved Mood
- Reduction in Anxiety
- Reduction in Stress
- Welling