Eciggity

99-115 Aiea Heights, Lower Level Dr. #107
Aiea, Hawaii 96701

Carbonyl Analysis

ELiquidity

Analytical Report
(0915-506)

GC/MS Analysis (ENT225)

Diacetyl
2,3-Pentanedione (aka Acetyl propionyl)

Enthalpy Analytical, Inc.
Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report summary:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol

This analytical report was prepared in Portable Document Format (.PDF) and contains 9 pages.

Jennifer B. Feller

QA Review Performed by: Jennifer B. Feller

Report Issued: 10/1/2015

Summary of Results

Report for: Eciggity
Client Project: Eliquidity
Sample Type: e-Liquid

Project Code: 0915-506
Analysis Method: GC/MS

Concentrations, ug/mL

Enthalpy Code	Client Sample ID	Diacetyl	2,3-Pentanedione #
0914-81-06	Strawberry Peach Menthol	< 0.827 ND	< 0.853 ND
0914-193-15	Vanilla Custard	< 2.07 ND	< 2.13 ND
0914-197-01	Strawapple	< 2.07 ND	< 2.13 ND
0715-520-01	Loopy Fruit	< 1.13 ND	< 1.07 ND

#: Pentanedione is also known as acetyl propionyl.

ND: Non Detect or analytical result below the MDL and is less than (<) the reported value.

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	Eciggity
Analyst	LAH, JM
Parameters	GC/MS Analysis

Client Proj	ELiquidity
Job #	0915-506
# Samples	4 e-Liquids

Custody

Summer Mims received the samples on 9/9/14, 9/23/14, and 7/6/15 after being relinquished by Juicemafia, Inc. The samples were received at ambient temperature and in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for diacetyl and 2,3-pentanedione (aka acetyl propionyl) following the analytical procedures in Enthalpy SOP ENT225.

A measured volume of sample was combined with a measured volume of acetonitrile. A measured amount of internal standard (butanedione-d6) was added and the vial capped and mixed thoroughly to combine. An aliquot was then analyzed quantitatively against a linear calibration curve using a GC/MS.

The samples were analyzed using the Agilent Technologies Model 6890N Gas Chromatograph, “Herman,” equipped with a 5975B Mass Selective Detector and an appropriate column.

7890A Gas Chromatograph, "Impa,” was equipped with a 5975C Mass Selective Detector and an appropriate column for these analyses.

QC Notes

Quality control samples for this project met all acceptance criteria unless otherwise noted.

Reporting Notes

Sample and calibration curve chromatograms are available upon request.

The results presented in this report are representative of the samples as provided to the laboratory.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, Inc. TSC data reports, unless specifically noted otherwise.

- The acronym ***TSC*** represents Enthalpy's *Tobacco Smoke Chemistry* department.
- The acronym ***MDL*** represents the *Minimum Detection Limit*. Below this value, the laboratory cannot determine the presence of the analyte of interest reliably.
- The acronym ***LOQ*** represents the *Limit of Quantitation* (aka *Lowest Standard Value* or *Lower Curve Limit*). Below this value, the laboratory cannot quantitate the analyte of interest within the criteria of the method.
- The acronym ***ND*** following a value indicates a *non-detect* or analytical result below the MDL.
- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.
- The letter ***E*** in the Qualifier or Flag column in the results indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered an estimate.
- The acronym ***DF*** represents *Dilution Factor*. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final, undiluted sample result.
- The addition of ***MS*** to the Sample ID represents a *Matrix Spike*. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).
- The addition of ***MSD*** to the Sample ID represents a *Matrix Spike Duplicate*. Prepared in the same manner as an MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.
- The Sample ID ***LCS*** represents a *Laboratory Control Sample*. Clean matrix (similar to the client sample matrix) is prepared and analyzed by the laboratory using the same reagents, spiking standards, and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system.

General Reporting Notes
(continued)

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units rather than to 3 significant figures. For example, a value of 1,456.45 ug/mL is rounded to 1,456 ug/mL. There are four significant digits displayed, but no confidence should be placed on more than two significant digits.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M." There are several reasons a peak may be manually integrated. These reasons will be identified by the following two-letter designations on sample chromatograms, if provided in the report. The peak was *not integrated* by the software "***NI***," the peak was *integrated incorrectly* by the software "***II***," or the *wrong peak* was integrated by the software "***WP***." These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

- The suffix ***–Mod*** signifies that the method and/or SOP used has been modified to meet the needs of the analysis.

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