Certificate of Analysis

Sample Name:	Puariki Instant	**Batch Number & Sample ID:**	**B1**SL
Description:	Dehydrated aqueous kava root extract	**Analysis Identification Code:**	240930U26
		Plant Morphologist:	Joses Laau
Process/Mix Date:	**26/09/2024**	**Chromatographer:**	John McGowan
Micro Lab Sampling Date:	27/09/2024	**Microbiologist:**	Ariane Urriza
ASE Processing Date:	30/09/2024	**Sample Preparation Technician:**	Eva David Livo
UHPLC Injection Date:	30/09/2024	**Quality Control Officer:**	Anabel Belen
Date of Report:	25/11/2024	**Quality Assurance Manager:**	Dianne Manley

Executive Summary

Total extracted major kavalactones = **7.95%** of sample mass (w/w)

Chemotype = **423165** Moisture Content: **2.36%** (w/w)

Contamination = **Pass** Categorisation = **Noble kava**

K and DHK Ratios

K to DHK: 1.60	DHK to K: 0.63
K to Y: 2.33	DHK to Y: 1.46
K to DMY: 3.60	DHK to DMY: 2.26
K to M: 4.65	DHK to M: 2.92
K to DHM: 5.10	DHK to DHM: 3.20

Chemical Analysis:

Sample Preparation:1.000 g processed kava powder dispersed with silica sand to fill 10 mL Dionex™ ASE™ cell

Extraction method: Accelerated Solvent Extraction (ASE)

Extraction Process Automation: Thermo Scientific Dionex™ ASE™ 350 Accelerated Solvent Extractor

ASE Conditions – **Solvent**: HPLC grade Acetonitrile (ACN), **Temperature**: 60 °C, **Pressure**: 105 Bar, **Pre-incubation**: 5 min,

Static Hold: 20 min, **Rinse Volume**: 150%, **Dilution to Working Range**: 1 part ASE™ filtrate + 9 parts solvent (ACN) to give 1/10

Pre-UHPLC Particulate Exclusion: ASE™ filtrate passed through Dionex™ D28 cellulose filter prior to dilution to working concentration, then passed through 0.22 µm hydrophilic PTFE filter prior to injection

Chromatographic Conditions:

System:	Thermo Scientific Vanquish Horizon Ultra-High-Performance Liquid-Chromatography
Instrument Components:	VF-A10-A Split Sampler, VF-P10-A binary pump, VH-C10-A Column Compartment, and VF-D11-A Diode Array Detector
Column:	200 x 2.1 mm Hypersil GOLD, 1.9 µm particle size
Mobile Phase:	5% isopropanol to 97% isopropanol in water (nonlinear). Total runtime 15.9 minutes
Column Temperature:	60 °C, with active pre-heating **Injection Volume:** 2.00 µL **Organic Modifier**: None
UV Detection:	362 nm (aflatoxin B_1 and B_2 identification), 341 nm (flavokavain and aflatoxin G_1 and G_2 identification), 246 nm (kavalactone identification), and 218 nm (kavalactone and aflatoxin secondary peaks); Peak identification assisted by elution time and spectrum matching. Relative quantification calculations based on channel 3 (246 nm)
Calibration Standards:	Correlation coefficient for all identified compounds is greater than 99.995% on a 20-point calibration curve derived by serial dilution of 1 ampoule of Cerilliant (kavalactones and flavokavains) and 1 ampoule of Ehrenstorfer (aflatoxins) certified analytical reference standards. Analytical balances calibrated with certified class OIML E2 weights with uncertainty +/- 0.000016 g (NATA accredited for compliance with ISO/IEC 17025, by laboratory No.3279)
Instrument Method:	**Software**: Chromeleon 7.2.10 **Program**: 240604 Hypersil iPrOH
Processing Method:	**Software**: Chromeleon 7.3.2 **Program**: 240606 Hypersil iPrOH Pro
Confidence Probability:	Lower = 99.5% Upper = 99.5%

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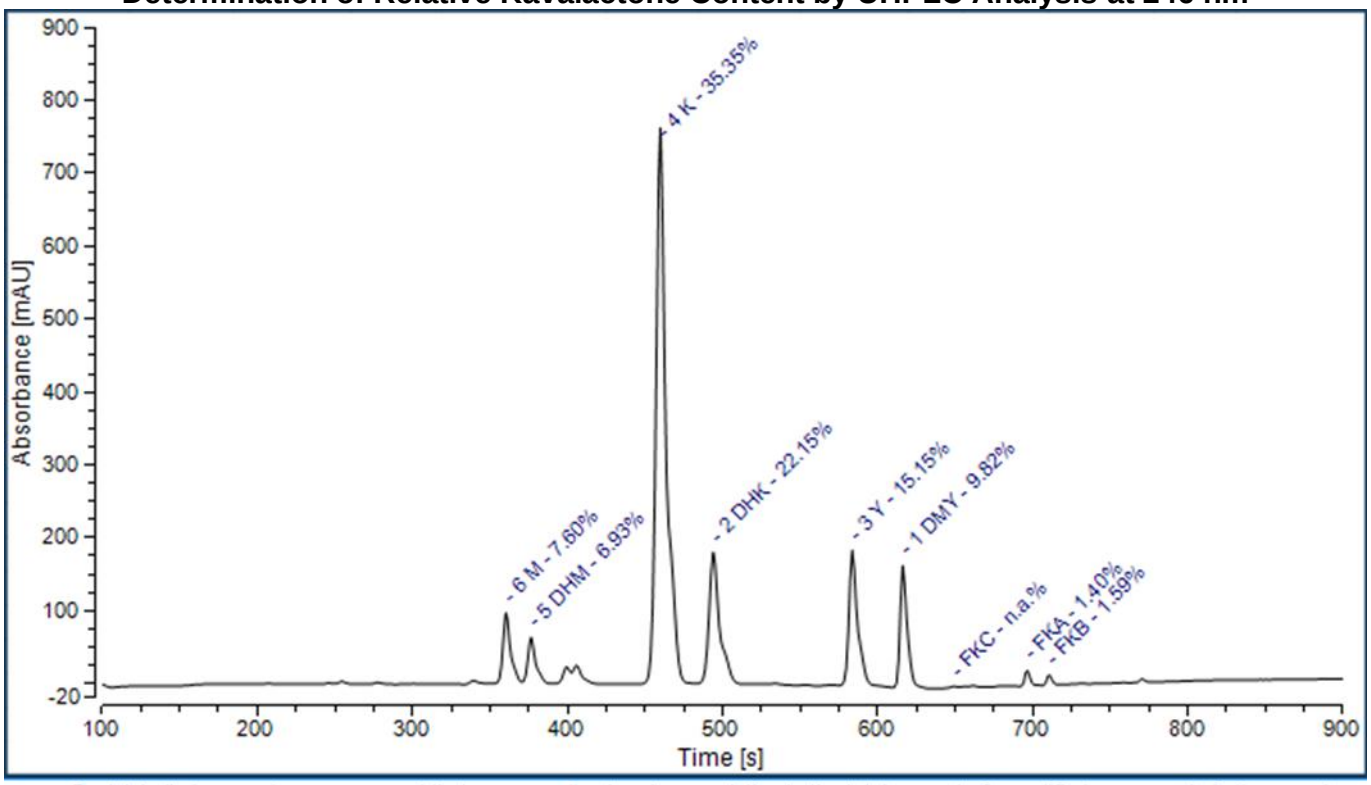
Determination of Relative Kavalactone Content by UHPLC Analysis at 246 nm



Peak labelled percentages represent that compound's abundance relative to the total amount of quantified compounds in the sample

Integration Results

Chem # Name abv	Rel.Amt %	Spectrum Match	Rtn T. min	Rel.Ar %	Rel.Ht %	R^2 %	HV LoD (mg/kg)	Cor.Coef %	Cal. Pts.	Lower Limit	Amount (mg/kg)	Upper Limit	Extracted % of mass
4 K	35.355	999.987	7.664	55.45	50.96	99.997	2.9065	99.998	20	28884	28978	29073	2.898
2 DHK	22.154	999.560	8.235	13.72	12.08	99.998	2.2489	99.999	20	18114	18158	18203	1.816
3 Y	15.151	999.689	9.728	11.75	12.46	99.999	2.0071	99.999	20	12390	12418	12446	1.242
1 DMY	9.820	999.151	10.271	8.62	11.19	99.998	2.2349	99.999	20	8024	8049	8074	0.805
6 M	7.599	998.980	6.007	5.40	6.50	99.998	2.3968	99.999	20	6203	6228	6254	0.623
5 DHM	6.934	995.831	6.275	3.63	4.25	99.998	2.0995	99.999	20	5661	5683	5706	0.568
FKB	1.586	999.292	11.841	0.55	0.98	99.991	0.4956	99.996	20	1293	1300	1307	0.130
FKA	1.402	992.655	11.605	0.83	1.48	99.994	0.4032	99.997	20	1144	1149	1155	0.115
FKC	n.a.	957.267	10.820	0.05	0.09	99.999	0.1742	99.999	20	n.a.	n.a.	n.a.	n.a.
Totals:	100%			100%	100%	**Major Kavalactones Extracted (% of total mass):**							7.952
Flavokavains Extracted (relative %): 2.988						Flavokavains Extracted (% of total mass):							0.24

Peak Results

Peak Name	Peak No.	Purity Match	Ret. T. (S)	Signal to Noise	Peak to Valley	Area mAU*min	Height mAU	Width 50% min	Type	Res (EP)	Asym (EP)	Plates (EP)
4 K	3	999	459.842	51.4	1373.27	95.917	762.714	0.17	BM *	3.31	1.42	32598
2 DHK	4	997	494.082	12.2	325.51	23.728	180.788	0.18	MB*	9.20	1.46	35059
3 Y	5	998	583.662	174.5	n.a.	20.319	186.453	0.15	BMB	3.85	1.50	67684
1 DMY	6	1000	616.262	156.8	n.a.	14.911	167.537	0.13	BMB	4.63	1.43	94644
6 M	1	999	360.402	6.6	47.97	9.347	97.225	0.13	BM *	2.00	1.41	32328
5 DHM	2	999	376.522	4.3	31.38	6.282	63.594	0.14	MB*	9.10	1.38	33968
FKB	9	996	710.482	11.4	58.29	0.946	14.741	0.10	MB	n.a.	1.34	231557
FKA	8	990	696.302	17.1	87.65	1.439	22.168	0.10	BM	2.39	1.32	214850
FKC	7	901	649.222	1.1	n.a.	0.086	1.409	0.13	BMB*	7.69	1.05	171987

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Summary of Microbial Analysis:

Microbial analyses are carried out in accordance with Forney Enterprises' Quality Assurance Programme. Analyses are performed in our modern, well-equipped, built-for-purpose microbiology laboratory, by experienced staff who are skilled in the art, using aseptic technique, calibrated equipment, and high-quality reagents, and incorporate the use of controls. Any given test may be performed using more than one method, substrate, or growth medium, including (but not limited to) 3M Petrifilm, HyServe Compact Dry plates, traditional and chromogenic agars, and culture-specific broths to validate results. We combine the use of industry standard protocols (such as FDA BAM and AOAC OMA) and proprietary methods developed in-house, however, the results reported are from the most sensitive method used (highest test counts). Forney kava is produced in a closely regulated HACCP certified facility, with continuous environmental monitoring and comprehensive testing throughout the production process. The figures below result from testing the finished product as packaged. Kava powder which does not meet the strictest criteria cannot bear the Forney logo.

Indicator Organism	**Test Results (cfu/g)**
Aerobic Plate Count (TPC)	550
Coliform	None detected
Escherichia coli	None detected
Yeast	None detected
Mould	None detected
Staphylococcus spp.	None detected
Salmonella spp.	None detected
Listeria spp.	None detected

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