SPECIFICATION
KUNZEA OIL

SYNONYM: DU CANE KUNZEA® OIL

T.G.A Federally approved for aromatherapy and as a therapeutic good for external use only. ARTG Listing Number AUSTL 72143

Characteristics

Kunzea oil is the essence produced by the steam distillation of the leaves, twigs and small branches of the native bush *Kunzea ambigua* that is a complex mixture of organic substances consisting mainly of mono and sesquiterpenes. It contains no known prohibitive substances or drugs of addiction.

This oil differs greatly from Australian Tea Tree Oil, of which the three major constituents make up only approximately 1% of Kunzea oil, 1,8–cineole excepted which is in both oils.

Specifications

Appearance	:	A pale yellow liquid mobile at 20° C
Odour	:	Mild myristic
Relative density	:	0.912 at room temperature
Flashpoint	:	55 °C Closed Cup

Six Major Components :-

	Minimums encountered so far per item %	Average % from 15 batches (10-24 inclusive)
alpha pinene	24.0	42.5
1,8–cineole	10.2	13.6
globulol	4.2	9.6
viridiflorol	2.8	8.1
bicyclogermacrene	3.3	5.2
alpha terpineol	1.2	2.0
Total	45.7	81.0

These figures are based on corrected GCMS results

These percentages may be subject to variation as new areas are brought into production. Research so far indicates that these variations are not expected to affect the performance of the oil and analysis is always provided with each new batch.

Main Attributes

For pain relief and reduction of swelling and irritation caused by a variety of problems.

Also diffuses impact bruising, relieves sinus and is helpful in treatment of chilblains.

Refer to attached brochure for more detail, and GCMS detailing 20 components, which would satisfy ISO 4730.

Brochure also contains 13 testimonials.

Additional Information

Also attached are documents relating to validated recovery tests on five organisms and kill tests on yeasts and moulds as well as inhibitory and kill tests for Golden Staph.

Production

The oil is produced in clean and natural NE Tasmania. See brochure.

Availability

At present estimated annual production is 500 kg. Currently 150 kg in storage.

Storage

In cool dry ventilated area in airtight and light-proof containers. Do not store in plastic.

Cautions

- Do not apply undiluted to skin except on the advice of a health care practitioner.
- External use only.
- Keep out of reach of children.
- Avoid contact with the eyes.
- If ailment persists seek medical advice.
- Store below 30°C

Private Bag 74, Hobart
Tasmania 7001 Australia
Phone (03) 62262157 Fax (03) 62262494
noel.davies@utas.edu.au

UTAS

Central Science Laboratory

15-May-2012

Mr John Hood
Ducane Estate
Waterhouse
Tasmania 7262

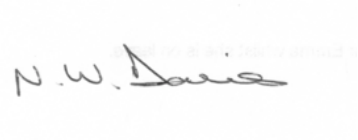
Dear Mr Hood,

Below are the results of the analysis of the recently submitted batch #19 Kunzea oil. These results were obtained on a Bruker-300 GC-MS system using a direct coupled interface. As discussed, this now yields directly what in the past has been labelled as 'corrected' TIC peak area data. I have calculated backwards to also give the equivalent of the old 'uncorrected' TIC areas to enable easier comparison of samples.

Kunzea Oil - batch #19

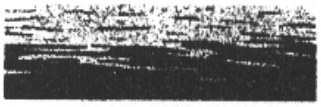
Compound	Calculated 'Uncorrected' TIC peak area (%)	Corrected TIC peak area (%)
alpha-pinene	29.6	37.6
beta-pinene	0.3	0.4
sabinene	0.4	0.5
myrcene	0.3	0.3
alpha-terpinene	0.1	0.1
limonene	1.1	1.3
1,8-cineole	13.0	15.0
gamma-terpinene	0.3	0.3
trans-beta-ocimene	0.2	0.2
p-cymene	0.4	0.4
isoamyl isovalerate	0.5	0.6
terpinene-4-ol	0.4	0.4
alpha-terpineol	2.2	1.9
bicyclogermacrene	5.1	4.4
citronellol	1.1	0.9
calamenene	1.5	1.2
ledol	2.0	1.5
globulol	16.2	12.0
viridiflorol	13.1	9.7
spathulenol	1.1	0.8

Yours sincerely,



A/Prof Noel Davies
Principal Research Fellow and OIC, Organic Mass Spectrometry

AQUAHEALTH
University of Tasmania
NATA Registered Laboratory No 3314
(Biological Testing)



GPO Box 252 - 54 Hobart Tasmania 7001 Australia
Telephone (03) 6226 2731 Fax (03) 6226 2774
Mobile 015 871 171 Email: cgarland@agsci.utas.edu.au

1 October 1998

Mr J Hood
Ducane Estate
Kurani
2989 Waterhouse Rd
Waterhouse TAS 7262

Dear John,

re: Microbiological Testing of Kunzea Oil

I refer to our correspondence dated 2 January 1998 and our recent phone conversation.

Please find attached copies of Reports P1/98 and P3/98 relating to samples of kunzea oil submitted for analysis on 10 January 1998.

As you can see in Report P1/98, the SPC (total aerobic heterotrophic bacteria) and yeasts and moulds counts were very low and satisfactory.

In Report P3/98, we first undertook validated recovery of Coagulase Positive *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *E.coli* and *Candida albicans* from the product. Subsequently we tested the product and did not detect these organisms, which was a very satisfactory result.

In the case of *Clostridium perfringens*, we have attempted on five (5) different occasions, most recently in mid August, to validate recovery of the organism from the product but have still not succeeded. This is the reason for the lenghthy delay in reporting to you. If you would like us to proceed with further *C.perfringens* testing, we will need to devise a different approach.

Regards,

Dr C D Garland, Director

AQUAHEALTH
University of Tasmania
NATA Registered Laboratory No 3314
(Biological Testing)

GPO Box 252 - 54 Hobart Tasmania 7001 Australia
Telephone (03) 6226 2731 Fax (03) 6226 2774
Mobile 015 871 171 Email: cgarland@agsci.utas.edu.au

MICROBIOLOGICAL RESULTS FORM (1998)

Submitted by: Mr J Hood
Address : 2989 Waterhouse Rd
Waterhouse TAS 7262
Phone: (03) 6355 2205
Fax:

Organisation : Ducane Estate

Report No. P1/98
Page: 1 of 1

SIGNED: (C Garland)

Date report issue : 20/1/98

Sample No.	Lab No.	Sample Type	Date & Time Collected	Date & Time Submitted	Date of Tests	Tests * Required	Results SPC /g	Yeasts /g	Moulds /g
1	P1/1	Kunzea oil, 100ml (mfd Mar/Apr 97)	10/1/98	12/1/98, 1100	15/1/98	SPC, Y&M	<1	<1	<1
2	P1/2	"	" "	"	"	"	<1	<1	<1

SPC =Standard Plate Count (@30^{0}C/3days), Y&M= Yeasts & Moulds (@22^{0}C/5days)
mfd = manufactured
* Tests were performed on samples as received

AQUAHEALTH
University of Tasmania
NATA Registered Laboratory No 3314
(Biological Testing)

GPO Box 252 - 54 Hobart Tasmania 7001 Australia
Telephone (03) 6226 2731 Fax (03) 6226 2774
Mobile 015 871 171 Email: cgarland@agsci.utas.edu.au

MICROBIOLOGICAL RESULTS FORM Pharmaceuticals (1998)

Submitted by: Mr J Hood
Address : 2989 Waterhouse Rd
Waterhouse TAS 7262
Phone: (03) 6355 2205
Fax:

Organisation : Ducane Estate

Report No. P3/98
Page: 1 of 2

SIGNED: (C Garland)

Date report issue : 1/10/98

Sample No.	Lab No.	Sample Type	Date & Time Collected	Date & Time Submitted	Date of Tests	Tests * Required	Results - Preparatory Testing (Method E)				
							CP *Staph. aureus* /g	*Pseudomonas aeruginosa* /g	*E. coli* /g	*Cl.perfringens* /g	*Candida albicans* /g
1	P1/1	Kunzea oil, 100ml (mfd Mar/Apr 97)	10/1/98	12/1/98, 1100	13-21/3/98	Preparatory Testing (Method E)	present (inoculum=70)	present (inoculum=59)	present (inoculum=19)	absent (inoculum=47)	present (inoculum=65)

* Tests were performed on samples as received. Note that the laboratory is not NATA registered for the *Cl.perfringens* test at present.

CP *Staph.aureus*=Coagulase Positive *Staphylococcus aureus*, *Cl.perfringens*=*Clostridium perfringens*

Test Methods
Modified from USP XXIII

National Association of Testing Authorities, Australia

AQUAHEALTH
University of Tasmania
NATA Registered Laboratory No 3314
(Biological Testing)

GPO Box 252 - 54 Hobart Tasmania 7001 Australia
Telephone (03) 6226 2731 Fax (03) 6226 2774
Mobile 015 871 171 Email: cgarland@agsci.utas.edu.au

MICROBIOLOGICAL RESULTS FORM Pharmaceuticals (1998)

Submitted by: Mr J Hood
Address : 2989 Waterhouse Rd
Waterhouse TAS 7262
Phone: (03) 6355 2205
Fax:

Organisation : Ducane Estate

Report No. P3/98
Page: 2 of 2

SIGNED: (C Garland)

Date report issue : 1/10/98

Sample No.	Lab No.	Sample Type	Date & Time Collected	Date & Time Submitted	Date of Tests	Tests * Required	Results - Limits Testing(Method E) CP *Staph. aureus* /g	*Pseudomonas aeruginosa* /g	*E. coli* /g	*Candida albicans* /g
1	P1/2	Kunzea oil, 100ml (mfd Mar/Apr 97)	10/1/98	12/1/98, 1100	13-21/3/98	Limits Testing (Method E)	absent	absent	absent	absent
2	P1/3	"	"	"	"	"	absent	absent	absent	absent

* Tests were performed on samples as received.

CP *Staph.aureus*=Coagulase Positive *Staphylococcus aureus*.

Test Methods
Modified from USP XXIII

National Association of Testing Authorities, Australia

MELBOURNE • SYDNEY

Our Ref: 98007146 an

9th November 1998

JJ & PA Hood
Ducane
Waterhouse
via Bridport
TASMANIA 7262

ATTENTION MR JOHN HOOD

Dear Sir,

RE: EVALUATION OF INHIBITORY PROPERTIES OF DUCANE KUNZEA OIL

A sample marked Ducane Kunzea Oil was evaluated in a Minimum Inhibitory Concentration test against the organisms *Staphylococcus aureus* and *Pseudomonas aeruginosa* under the following test conditions:

Test Diluent:	Tryptone Soya Broth
Incubation:	48 hours
Temperature:	37°C
Test Organisms:	*Staphylococcus aureus* NCTC 4163
	Pseudomonas aeruginosa NCTC 6749
Product Dilution Range:	5%-0.01%#

#Concentrations of product above 5% could not be evaluated in such a broth assay due to excessive turbidity.

The assays were performed in duplicate utilizing fresh cultures and solutions on each occasion.

The results are presented overleaf.

MICROTECH LABORATORIES PTY LTD ACN 006 462 335
18-20 King Street, Blackburn, Victoria 3130 Australia
Phone (03) 9877 8222 Fax (03) 9877 8444
SYDNEY OFFICE: Phone (02) 9742 6122 Fax (02) 9742 6190
http://www.microtechlab.com

Our Ref: 98007146 an

Results

Test Organism: ***Pseudomonas aeruginosa NCTC 6749***

Test	Dilution									
	5%	2.5%	1.25%	0.63%	0.31%	0.16%	0.08%	0.04%	0.02%	0.01%
1	+	+	+	+	+	+	+	+	+	+
2	+	+	+	+	+	+	+	+	+	+

Test Organism: ***Staphylococcus aureus NCTC 4163***

Test	Dilution									
	5%	2.5%	1.25%	0.63%	0.31%	0.16%	0.08%	0.04%	0.02%	0.01%
1	-	-	-	-	-	-	+	+	+	+
2	-	-	-	-	-	-	+	+	+	+

Notes: '-' indicates no growth. '+' indicates growth.

The product showed significant inhibitory properties of *S.aureus* at a concentration of 0.16% w/v. No inhibitory properties were noted against the organism *Pseudomonas aeruginosa* at a concentration of up to 5% w/v.

Yours faithfully,

DERIO COMAR BSc(HONS),FRACI,AAIFST,MASM
SENIOR CONSULTANT MICROBIOLOGIST
DIRECTOR

micro tech
MELBOURNE • SYDNEY

Our Ref: 98007146A an

21st December 1998

JJ & PA Hood
Ducane
Waterhouse
via Bridport
TASMANIA 7262

ATTENTION MR JOHN HOOD

Dear Sir,

RE: BIOCIDAL EVALUATION OF ESSENCE OF DUCANE KUNZEA

A sample marked 'Essence of Ducane Kunzea' was evaluated in a suspension test based on the principles outlined in BS 3286 under the following test conditions.

Product Concentration:	Neat
Contact Times:	10, 20, 30, 60 minutes
Diluent:	None
Organic Challenge:	None
Temperature:	Ambient
Test Organisms:	*Staphylococcus aureus* NCTC 4163
Inoculum Density:	10^6-10^7 orgs/mL
Inactivator System:	NB No. 2 with Lecithin/Tween
Enumeration System:	0.1% Peptone MLA 30°C/72 hrs

The results presented are Geometric means of duplicate tests utilizing fresh cultures and solutions on each occasion.

MICROTECH LABORATORIES PTY LTD ACN 006 462 335
18-20 King Street, Blackburn, Victoria 3130 Australia
Phone (03) 9877 8222 Fax (03) 9877 8444
SYDNEY OFFICE: Phone (02) 9742 6122 Fax (02) 9742 6190
http:\\www.microtechlab.com

Our Ref: 98007146A an

Results

Organism	Initial Count per mL	Final Count per mL			
		10 min	20 min	30 min	60 min
Staphylococcus aureus	2.6×10^6	4.2×10^4	3.2×10^3	300	<100
Kill Factor		98.35%	99.87%	99.988%	>99.996%
Log Reduction		1.8	2.9	3.9	>4.4

Notes: 1. '<' indicates Less Than.
2. '>' indicates Greater Than.
3. Results are Geometric means of duplicate tests.

The product was found to achieve a kill factor of greater than 99.99% against *Staphylococcus aureus* at a contact time of one hour, when tested under the above test conditions.

Yours faithfully,

DIEGO COMAR BSc(HONS),FRACI,AAIFST,MASM
SENIOR CONSULTANT MICROBIOLOGIST
DIRECTOR

TO WHOM IT MAY CONCERN

In early May, 2001 a gentlemen was admitted to a nursing home in Melbourne with a Per Enteric Gastrostomy (P.E.G.) site colonised with Methicillin Resistant Staphylococcus Aureus (M.R.S.A.)

While the colonisation of the P.E.G. was not viewed as a problem for the resident, there was some concern regarding the possibility of cross infection to other frail aged residents. With the permission of the resident's Medical Officer it was decided to treat the site with Kunzea Oil which had been demonstrated in laboratory tests to be effective in killing Staph aureus.

A swab was taken from the P.E.G. site on Tuesday 15 May, 2001. The laboratory reported the growth of MRSA and Gram -ve bacilli+++.

Over the next seven days the P.E.G. site was dressed twice daily. This involved cleansing with normal saline and the application of 2 drops of 20% Kunzea oil i.e. 1 part Kunzea to 4 parts carrier oil in this case grapeseed oil.

A swab was taken on Tuesday 22nd May which revealed scant growth of Staph aureus resistant to Amoxycillin and Penicillin. There were no Gram -ve bacilli present.

Joan Evans

Joan Evans
R.N., M.S., F.R.C.N.A.

24-07-01

MELBOURNE PATHOLOGY

Results: 9287 7804
General: 9287 7700

Lab Id: 80132394
[redacted]
ASHLEIGH LODGE PRIVATE N/HOME
58 COCHRANE ST
BRIGHTON 3186
DOB: [illegible] SEX: [illegible] AGE: [illegible]

To: ASH Cr: 6M Tg: MAIL6
ASHLEIGH LODGE PRIV NURSING HOME
Ward: - Unknown
58 COCHRANE ST
BRIGHTON VIC 3186

Patient tel#:95962788
Referred by:DR SIMON COOPER
Date Collected:15/05/2001@0750

(1)

SPECIMEN: SWAB FROM PEG SITE

GRAM STAIN:

Leucocytes :+	G+ve cocci:NIL	G+ve bacilli:NIL
Epi. cells :Few	G-ve cocci:NIL	G-ve bacilli:++

CULTURE:

Heavy growth mixed flora

Organism 1 Staphylococcus aureus Scanty growth

SENSITIVITIES:

	Organism 1
Amoxycillin	R
Amoxycillin/Clavulanate	R
Ciprofloxacin	R
Clindamycin	R
Cephalexin/Cephalothin	R
Erythromycin	R
Fusidic Acid	S
Flucloxacillin	R
Penicillin	R
Rifampicin	S
Vancomycin	S

COMMENTS:80132394

NOTE PRESENCE OF METHICILLIN/FLUCLOXACILLIN RESISTANT STAPHYLOCOCCUS AUREUS. FOR ORAL THERAPY, IT IS NECESSARY TO USE TWO SUITABLE ANTIMICROBIAL AGENTS SIMULTANEOUSLY TO REDUCE RISK OF FURTHER RESISTANCE.

MICROBIOLOGY

Reporting Lab :103 Victoria Pde, Collingwood, Vic, 3066
This report: COMPLETE Authorised By: SLAHER 25-05-2001 10:45 AM
Tests requested: GMC1
PAGE 1

Pathologist Dr Rob Baird
Printed: 25/05/2001 17:33
FILE PERMANENTLY.

MELBOURNE PATHOLOGY

Results: 9287 7804
General: 9287 7700

Lab Id: 80529995
[redacted]
ASHLEIGH LODGE PRIVATE N/HOME
58 COCHRANE ST
BRIGHTON 3186
DOB: [redacted]

To: ASH Cr: 6M Tg: MAIL6
ASHLEIGH LODGE PRIV NURSING HOME
Ward: - Unknown
58 COCHRANE ST
BRIGHTON VIC 3186

Patient tel#:95962788
Referred by:DR SIMON COOPER
Date Collected:22/05/2001@0000

(2)

SPECIMEN: SWAB FROM PEGSITE

GRAM STAIN:

Leucocytes :+	G+ve cocci:NIL	G+ve bacilli:NIL
Epi. cells :Few	G-ve cocci:NIL	G-ve bacilli:NIL

CULTURE:

Moderate growth mixed flora

Organism 1 Staphylococcus aureus Scanty growth

SENSITIVITIES:

	Organism 1
Amoxycillin	R
Amoxycillin/Clavulanate	S
Clindamycin	S
Cephalexin/Cephalothin	S
Erythromycin	S
Flucloxacillin	S
Penicillin	R

*** The above result has been amended ***

MICROBIOLOGY

Reporting Lab :103 Victoria Pde, Collingwood, Vic, 3066
This report: COMPLETE Authorised By: HSMITH 25-05-2001 9:35 AM
Tests requested: GMC1
PAGE 1

Pathologist Dr Rob Baird
Printed: 25/05/2001 17:33
FILE PERMANENTLY.