

A Study for Antistress Effects of Two Aromatic Synergic Blending Oils

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- Abstract -

Purpose : This study was performed to evaluate the antistress effects of two aromatic blends being composed of synergic essential oils and also to differentiate its effectiveness between two. **Methods** : The subject were 20(10 for men, 10 for women) for vital factors and another 20(10 for men, 10 for women) for serum catecholamine. Vital factors(blood pressure, pulse), electroencephalography, psychological tests(SACL, STAI) and serum catecholamine were applied to the subjects. **Results** : 1. All two aromatic synergic blends revealed no significant difference of vital factors after inhalation but stable conditions generally by lowering pulse and blood pressure after inhalation. 2. Both blends were significantly valuable in antianxiety and antistress effects statistically. There were no statistically difference between two blends. 3. There were no significant difference in all brain waves after inhalation of two blends but generally stable brain waves were seen in all areas. 4. There were antistress effects of both blends in accordance of decreased serum catecholamines after inhalation of both blends. There were no significant difference between two blends statistically. **Conclusion** : Both two aromatic synergic blends reached effective antistress and antianxiety states after inhalation of each blends. There were no significant difference between two blends. Further studies about the effectiveness between the amount of aromatic essential oils and the duration of inhalation should be considered. Also clinical applications of these two aromatic synergic blending oils to develop the aromatic products would be affordable in the future.

Key Words : Aromatherapy, EEG, Antistress, Antianxiety, Aromatic synergic blending oils

620 - 5

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:

1.

2000 1 20 2000 2 25
100% 20 (10 , 10)

가

21 ~ 32 24.2
21 ~ 33 27.2

2.

30%

2

SACL STAI

5

5

5

5

SACL STAI

가

2

2.

300

가

1)

가

2 ~ 3가

(가)

2

18가

가

가

3.

2

Citrus sinensis(sweet orange), Rosemarinus officinalis(rosemary), Citrus limonum(lemon), Lavandula officinalis(lavender), Pelargonium graveolens(geranium), Citrus bergamia(bergamot), Cananga odorata(ylangylang).

가

. Rosemary 가

(2) SACL(Stress Arousal Check List)

30 가

가 가

. Rosemary 가 . SACL

Lemon 가

가 가

(3) STAI(State - Trait Anxiety Inventory)

Spielberg - 40 Likert 20 ~ 80

. Lemon (adrenergic effect) 가

⁵. Lavender -

(4) (Electroencephalography; EEG)

Geranium

lavender Bergamot

4가 (delta wave) 4Hz

가 . Ylangylang 가

, 20 ~ 200 μ V (徐波) (theta wave) 4 ~ 7.99Hz

Sweet orange 가

μ V 20 ~ 100 μ V (alpha wave) 8 ~ 12.99Hz

가 ⁸.

20 ~ 60 μ V

2)

가 . 10Hz 가 , “ ”

(1)

0.27 ~ 0.5 가 (beta wave) 13 ~ 30Hz 20 μ V

OMRON Corporation(Japan, 1998) Digital Blood Pressure Monitor with Fuzzy Logic T3

가 “ ” 立面

Compuedics Neuroscience Pty Ltd
 (1998) EEG M0020 V3
 FFT
 / % (31
) , , , Paired t test

Sodium DodecylSulfate 0.1g pH
 5.1 , 1ml/min
 (detector condition) Potential
 0.8V , Column TSKgel ODS-80Ts

4) ()

Alumina, Boric acid, Bovine serume albumin (BSA), Buthylated hydroxy toluene(BHT), Cytochrom c, 3,4-Dihydroxybenzylamine(DHBA), Hydrobromide, EDTA, Epinephrine, 3-Hydroxytyamine HCl, Luminol, Norepinephrine, Potassium chloride, Perchloric acid, Phenol, Potassium sodium tartrate, Sodium carbonate, Sodium hydroxide, Thiobaritric acid(TBA), Trichloroacetic acid(TCA), Tris Sigma chemical Co(St. Louis, Mo, U.S.A), Cupric sulfate Shinyo pure chemical Co(Japan)

3.

1)

20 (10 ,
 10)
 41 ~ 59 48.1
 31 ~ 50 43.4

2)

5)

3cc
 I
 5 3cc
 II I

methanol, iso-propanol,
 chloroform Merk HPLC
 EP 1

3)

1ml 3,000rpm
 500μ
 25mg 25 pmol DHBA(3,4-dihydroxybenzylamine) 1M Tris-HCl buffer(50mM EDTA, pH 8.6) 800μ 3000rpm
 10
 2 3000rpm 10
 0.1M perchloric acid 300μ
 , 3000rpm 10
 50μ ECD-HPLC

(,), ()
 20
 (, ,)
 가 Table 1

Adrenalin, Noradrenalin, Dopamine, DHBA 0.1M perchloric acid
 ECD-HPLC
 Hewlett Packard 1100 series
 HPLC System 1049 A Electrochemical
 Detector(ECD) 3 1
 Sodium Acetate 9.02g, Disodium EDTA 0.372g,

1.

(3, / I/ II)
 $F_{2,38} = 1.571$, $MSe = 88.459$,
 $p > .221$ 가

(Table 1).

(M = 226.00)

(M = 21.55)

(M = 19.25)

가

2.

(3, / I/ II)

가

가

$F_{2,38} = 0.314$, $MSe = 44.821$,

$p > .733$

가

(Table 2).

(Table 1).

2) SACL

3.

SACL

(3, / I/ II)

(3, / I/ II)

$F_{2,38} = 0.200$, $MSe = 42.655$, $p > .819$

가

$MSe = 9.945$, $p < .007$

$F_{2,38} = 5.737$,

가

(Table 1).

LSD

(M = 7.35)

4.

(M = 4.40)

(M = 4.45)

가

STAI

(Cronbachs

Alpha) 0.9028

SACL

0.8352,

가

가

0.5357

(Table 2).

1) STAI

3) SACL

STAI

(3

/ I/ II)

SACL

(3, / I/ II)

$F_{2,38} = 7.727$, $MSe = 7.727$, $p < .002$

가

$MSe = 4.038$, $p > .417$

$F_{2,38} = 0.896$,

가

LSD

(Table 2).

Table 1. Mean and S.D of Systolic and Diastolic Blood Pressure of Each Aromatic Synergic Blending Oils

	Before Inhalation	Aroma I	Aroma II
Diastolic Blood Pressure	135.10 (28.62)	129.95 (29.22)	131.55 (26.90)
Systolic Blood Pressure	81.10 (19.64)	79.60 (20.14)	79.70 (16.29)
Pulse	81.00 (12.61)	80.85 (10.66)	79.80 (10.88)

*(): S.D

Table 2. Mean and S.D of STAI and SACL of Each Aromatic Synergic Oil

	Before Inhalation	Aroma I	Aroma II
STAI	26.00(8.50)	21.55(7.26)	19.25(7.39)
SACL	7.35(5.44)	4.40(3.94)	4.45(4.61)
SACL	6.45(2.39)	6.85(2.68)	7.30(3.15)

*(): S.D

:

5. 3)
 1) I, II 가 . LSD 가 II
 가 I . (Table 5).
 II (Table 3).
 I, II 가 . LSD II 가 II,
 LSD 가 II (Table 6).
 (Table 4).

Table 3. Comparison alpha brain waves between two aromatic synergic blending oils before and after inhalation

Frequency Channel	Before Inhalation	Aroma I	Aroma II	F Value	significant of F
0	8.825	8.745	8.960	.251	.779
1	6.990	6.885	7.080	.503	.609
2	7.975	7.835	8.100	.788	.462
3	8.270	8.175	8.405	.568	.572
4	7.710	7.640	7.805	.276	.760
5	9.135	8.960	9.195	.585	.562
6	10.180	10.020	10.285	.569	.571
7	10.220	10.220	10.410	.382	.685
8	6.540	6.480	6.620	.405	.670
9	7.870	7.745	7.955	.499	.611
10	8.920	8.890	9.080	.430	.653
11	5.730	5.605	5.860	1.167	.322
12	9.890	9.700	9.905	.442	.646
13	11.110	10.900	11.115	.406	.669
14	10.100	9.990	10.215	.388	.681
15	6.045	6.055	6.120	.130	.878
16	7.400	7.205	7.515	1.037	.364
17	9.145	8.870	9.255	1.141	.330
18	12.590	12.260	12.590	.471	.628
19	11.930	11.725	12.005	.300	.742
20	9.155	9.020	9.255	.422	.659
21	7.490	7.330	7.560	.689	.508
22	7.500	7.365	7.690	.959	.392
23	10.705	10.395	10.770	.729	.489
24	12.035	11.710	12.010	.497	.612
25	11.410	11.185	11.460	.337	.716
26	7.630	7.510	7.720	.406	.669
27	11.695	11.515	11.830	.303	.740
28	11.815	11.740	12.065	.301	.742
29	12.430	12.395	12.750	.314	.733
30	11.875	11.980	12.165	.188	.829
31	12.090	11.910	12.125	.111	.895

Table 4. Comparison beta brain waves between two aromatic synergic blending oils before and after inhalation

Frequency Channel	Before inhalation	Aroma I	Aroma II	F Value	significant of F	Post -Hoc
0	3.430	3.500	3.540	.929	.404	
1	3.100	3.120	3.150	.197	.822	
2	3.400	3.325	3.400	.497	.612	
3	3.470	3.430	3.460	.147	.864	
4	4.250	4.325	4.395	.756	.476	
5	3.770	3.775	3.815	.159	.854	
6	4.040	4.040	4.070	.074	.929	
7	4.230	4.180	4.245	.338	.716	
8	2.685	2.685	2.680	.005	.995	
9	3.395	3.495	3.500	1.087	.347	
10	3.885	3.915	3.900	.068	.935	
11	2.605	2.770	2.905	5.625	.007	Before inhalation-Aroma II(p=.001)
12	3.980	4.035	4.045	.306	.738	
13	4.330	4.310	4.355	.122	.885	
14	4.165	4.170	4.180	.012	.988	
15	2.890	2.990	3.000	.591	.559	
16	3.480	3.690	3.770	2.291	.115	
17	3.880	3.925	4.015	1.037	.364	
18	4.765	4.765	4.795	.044	.957	
19	4.565	4.570	4.615	.108	.898	
20	3.935	3.945	3.975	.107	.899	
21	3.455	3.485	3.470	.060	.942	
22	2.860	2.970	3.030	1.929	.159	
23	4.195	4.215	4.270	.298	.744	
24	4.540	4.525	4.545	.018	.982	
25	4.550	4.520	4.560	.068	.935	
26	2.970	2.990	3.035	.480	.623	
27	4.440	4.470	4.495	.129	.880	
28	4.485	4.545	4.575	.331	.720	
29	4.730	4.875	4.870	.947	.397	
30	4.505	4.635	4.605	.697	.505	
31	4.545	4.595	4.620	.378	.546	

	Noradrenal	Adrenal	Dopamine	SE		
0	10.77	31.19	13.01	0.36	0.7	0.6
	3.63	20.03	5.54	0.29	0.36	0.15
	3.42	20.43	5.8	0.24	0.39	0.16

6.

1)

adrenaline, noradrenaline
II

dopamine I
(Fig. 1).

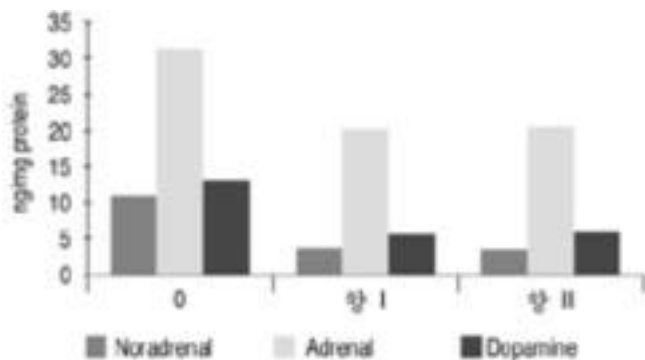


Figure 1. The Comparison of Catecholamine Content by Two Essential Oils in Human Plasma(P<0.05, n=20)

20
가

Pasquale Graziadei⁹

Table 5. Comparison delta brain waves between two aromatic synergic blending oils before and after inhalation

Frequency Channel	Before inhalation	Aroma I	Aroma II	F Value	significant of F	Post - Hoc
0	3.870	3.750	3.625	2.094	.137	
1	3.755	3.630	3.545	1.631	.209	
2	5.325	5.150	5.155	.632	.537	
3	5.340	4.995	4.970	2.440	.101	
4	4.510	4.285	4.145	1.839	.173	
5	4.570	4.475	4.330	1.409	.257	
6	4.955	4.940	4.850	.348	.708	
7	2.675	2.630	2.595	.943	.398	
8	5.330	4.760	4.660	2.098	.137	
9	4.130	4.035	3.850	2.230	.121	
10	4.950	4.760	4.640	1.393	.263	
11	3.840	3.825	3.625	.680	.513	
12	4.285	4.350	4.120	1.069	.354	
13	4.860	4.910	4.770	.667	.519	
14	4.400	4.460	4.335	.470	.629	
15	4.050	4.045	3.805	.554	.579	
16	3.985	3.855	3.625	2.237	.121	
17	4.365	4.295	4.130	.833	.443	
18	4.980	4.815	4.550	3.949	.028	Before inhalation- Aroma II(p=.027)
19	4.750	4.650	4.475	2.141	.132	
20	4.565	4.325	4.155	3.869	.030	Before inhalation- Aroma II(p=.043)
21	4.165	3.895	3.750	3.221	.051	
22	3.700	3.785	3.645	.476	.625	
23	4.395	4.280	4.100	1.743	.189	
24	4.755	4.655	4.520	1.776	.183	
25	4.970	4.835	4.620	3.020	.061	
26	4.140	3.965	3.820	2.330	.111	
27	4.605	4.560	4.345	2.139	.132	
28	4.595	4.525	4.310	2.159	.129	
29	4.600	4.505	4.380	1.427	.253	
30	4.470	4.400	4.240	1.261	.295	
31	4.580	4.495	4.380	.991	.381	

1. 2

Giovanni Gatti Renato Cayola¹²

11

2

가

2

chamomile, melissa, neroli,
petitgrain angelica,
cardamom, lemon, fennel

Table 6. Comparison theta brain waves between two aromatic synergic blending oils before and after inhalation

Frequency Channel	Before inhalation	Aroma I	Aroma II	F Value	significant of F	Post-Hoc
0	4.175	4.175	4.140	.087	.917	
1	4.050	3.955	3.850	2.141	.132	
2	4.995	4.780	4.740	1.837	.173	
3	5.085	4.900	4.805	2.126	.133	
4	4.275	4.155	4.010	3.164	.054	
5	5.405	5.280	5.125	4.020	.026	Before inhalation-Aroma II(p=.012)
6	6.005	5.920	5.820	1.588	.218	
7	3.680	3.590	3.585	1.359	.269	
8	4.440	4.245	4.155	2.345	.110	
9	4.610	4.575	4.410	2.776	.075	
10	5.240	5.120	5.065	1.349	.272	
11	3.635	3.635	3.540	.724	.492	
12	5.355	5.300	5.160	1.460	.245	
13	6.260	6.095	6.040	2.386	.106	
14	5.490	5.415	5.355	.903	.414	
15	3.880	3.975	3.760	1.121	.336	
16	4.165	4.215	3.990	1.986	.151	
17	4.775	4.820	4.660	1.067	.354	
18	5.750	5.645	5.600	1.020	.370	
19	5.555	5.465	5.425	.827	.445	
20	4.885	4.790	4.700	1.389	.262	
21	4.185	4.155	4.070	.502	.609	
22	3.945	4.070	3.940	1.323	.278	
23	5.060	5.005	4.980	.317	.730	
24	5.685	5.555	5.525	1.406	.258	
25	5.520	5.420	5.390	.695	.505	
26	4.105	4.100	4.015	.482	.621	
27	5.175	5.175	5.095	.515	.602	
28	5.160	5.095	5.090	.227	.798	
29	5.220	5.225	5.185	.092	.913	
30	5.035	5.025	4.975	.161	.852	
31	5.080	5.020	4.975	.380	.687	

2 가 가

bergamot, lime, neroli, petitgrain, lavender
lemon, orange, jasmine, ylangylang, sandalwood

2

가

II가

2

2. 2

SACL

I II

King ¹³

2

가

SACL

I II가

I II
 2 / , GABA, Substance P,
 가
 가 MHPG-SO₂
 가

3.2

Moncrieff
 가 가 가
 John Steele¹⁴ 3가
 가

. Neroli, jasmine, rose
 가 가 가
 basil, rosemary, black pepper,
 cardamom 가
 가
 2 receptor(2-R)가
 2-R가
 2-R가
 가 19.
 tor(-R)
 가
 -R 1 가
 20.

lavender jas-
 mine 가 17
 geranium rosewood, valerian 가
 가 15. International Flavor
 & Fragrance Inc. lavender orange
 jasmine 가
 lavender, sandalwood 가 2
 가

II 가
 가
 가
 2 가
 가
 2

4.2

10 가
 2

2 가

2

가 가

1. 2

2. 2

3.

4. 2

5. 2

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