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Helichrysum Italicum essential oil in concentration 0,1 mg/m³ and its effect on psychophysiological state of elderly people were investigated in terms of the research. Low concentration of *Helichrysum Italicum* essential oil mainly affected on psychological body tone, as a result - increasing of vivacity, attentiveness and efficiency level. Its influence in the same concentration occurred more pronounced concerning cardiovascular system: significant reduction of BPS (blood pressure systolic) and HR (heart rate).

Key words: *essential oil, aroma session, Helichrysum Italicum, psychorelaxing record, mental capacity, psychoemotional state.*

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ESSENTIAL OIL OF *LAVÁNDULA ANGUSTIFÓLIA* AND ITS EFFECT ON PSYCHOPHYSIOLOGICAL STATE OF ELDERLY PEOPLE BREATHING IT IN LOW CONCENTRATION

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Introduction

Lavandula angustifolia Mill. essential oils (EO) are used extensively in aromatherapy [6, 9]. It possesses antidepressive and stress-limiting effects [6-9]. It was demonstrated that in case of concentration 1 mg/m³ *Lavandula angustifolia* EO improves general condition of tested people, reduces personality anxiety, and raises mental capacity [5]. Important task is to minimize load on body in the course of aromatherapy, what is possible if to decrease concentration of that essential oil. It especially concerns elderly people. But in case of lower concentration aromatherapy effect can be not so pronounced.

Objective of this paper is to investigate *Lavandula angustifolia* EO on some functions of central nervous system in low concentration.

Objects and methods of the research

A group of 20 people, mainly women aged by 50-80 years were involved into this study. Control group was a similar group by composition and size. Tested people of the control group were having a rest for 20 minutes listening to psychorelaxation record. In experimental group participants were in the same room during the same time listening to the same psychorelaxation record and breathing *Helichrysum italicum* EO till the finite concentration (0,1 mg/m³). Tests were held before and after procedures.

To define procedures effect on cardiovascular system the following parameters were measured: heart rate (HR), blood pressure systolic (BPS) and blood pressure diastolic (BPD).

While proof test, WAM test and tests that measure thinking rate were used to determine EO effect on nervous system [1, 3, 4].

Findings were processed statistically applying t-criterion by Student [2].

Results and discussion

According to marks of WAM test, initially control and experimental groups didn't

have any significant differences (table 1).

After psychorelaxation session control group demonstrated a tendency to reduce capacity to work.

After procedure of aromapsychorelaxation experimental group presented significant improvement of all study parameters, besides vivacity. The latter pointed a tendency to rise. Finite values in experimental and control groups differ a lot – values of all parameters, besides relaxation, experimental marks are higher than control.

On the whole aromasession with *Lavandula angustifolia* EO improved psychoemotional state of participants.

Table 1

**Effect of *Lavandula angustifolia* EO on psychoemotional state of tested people
(according to WAM test parameters, standard units)**

Parameter	Experimental group initially	Control group initially	Experimental group after procedure	P ex b/a<	Control group after procedure	Pc b/a<	Pex/c after<
WAM general condition	128,55 ±7,73	126,40 ±8,02	149,25 ±7,18	0,005	128,00 ±6,92		0,05
Well-being	129,55 ±7,87	127,70 ±8,37	155,65 ±6,46	0,0009	128,65 ±7,08		0,01
Mood	130,95 ±7,64	122,90 ±10,15	160,45 ±6,82	0,0002	125,65 ±8,38		0,01
weakness – capacity to work	130,45 ±8,70	128,20 ±9,23	147,35 ±8,47	0,04	120,50 ±7,64	0,08	0,05
Tension – relaxation	128,15 ±8,09	128,20 ±8,87	149,00 ±8,25	0,01	139,43 ±7,76		
Inertness – vivacity	135,85 ±8,31	126,95 ±10,89	150,40 ±7,26	0,06	126,80 ±6,72		0,05
Absent-mindedness – attentiveness	140,80 ±9,50	138,30 ±7,59	158,85 ±6,42	0,03	132,64 ±6,86		0,05

According to psychoemotional state of tested people by anxiety and depression scale both groups didn't have any differences (table 2).

After psychorelaxation session in control group there were no any significant changes of test parameters.

After aromapsychorelaxation procedure experimental group didn't demonstrate any changes of the test parameters as well.

Table 2

**Effect of *Lavandula angustifolia* EO on psychoemotional state of tested people
(by scale of anxiety and depression, standard units)**

Scale	Experimental group initially	Control group initially	Experimental group after procedure	Control group after procedure
Anxiety	6,45±1,05	6,20±0,87	6,20±0,92	5,60±0,98
depression	6,90±0,91	6,70±0,89	6,80±0,83	6,65±0,85

As a result of procedures effect on mental capacity by proof test (digital data) initial difference between control and experimental groups isn't significant (table 3).

After psychorelaxation in control group there weren't any changes, only tendency to increase a number of mistakes during the test first minute.

Procedure of aromarelaxation in experimental group provoked significant rise of work rate during the test first minute.

Table 3

Effect of *Lavandula angustifolia* EO on mental capacity (according to proof test data)

Parameter	Group	Initially	After procedure	P b/a<
Rate 1, sign/min	control	288,55±14,84	304,00±14,60	
	experimental	293,00±14,35	325,00±20,36	0,01
Mistakes 1, signs	control	1,40±0,46	2,40±0,62	0,08
	experimental	1,90±0,43	1,95±0,43	
Rate 2, sign/min	control	292,55±16,10	278,70±20,80	
	experimental	284,70±16,92	314,10±24,90	
Mistakes 2, signs	control	2,20±0,76	2,95±0,66	
	experimental	2,75±0,95	1,80±0,55	

Initially complex mental processes test (filling the missed letters in words) didn't get any significant difference between data of control and experimental groups (table 4).

Procedure of psychorelaxation in control group didn't provoke any changes.

After aromapsychorelaxation in the experimental group a number of processed words slowed down, what was less than in the control group.

Table 4

Effect of *Lavandula angustifolia* EO on thinking rate (data of filling the missed letters test)

Parameter	Group	Initially	After procedure	P after <	Pex/c after <
A number of words, units	control	23,55±1,31	22,90±1,40		0,1
	experimental	24,20±1,29	19,50±1,34	0,05	
A number of mistakes , units	control	1,25±0,28	1,75±0,45		-
	experimental	1,10±0,18	1,15±0,34		

Initially before procedures there were no any significant differences between values of BP and HR in control and experimental groups (table 5). In this case in both groups average values of BPS were at high rate, BPD was normal by JNC6, HR was normal as well.

After session of psychorelaxation values of BP and HR in control group didn't differ from initial data.

In the experimental group session of aromapsychorelaxation provoked reduction of BPS till normal points, BPD till maximum mark. BPD tended to lower finite value in the experimental group in comparison with control group.

Table 5

Effect of relaxation procedure held with *Lavandula angustifolia* EO on BP and HR

Parameter	Experimental group initially	Control group initially	Experimental group after procedure	Pex b/a<	Control group after procedure	Pex/c after<
BPS, mm of Mercury	136,00 ±3,86	134,90 ±4,64	124,50 ±4,26	0,003	135,25 ±4,83	-
BPD, mm of Mercury	84,35 ±2,41	83,70 ±2,26	79,10 ±2,08	0,005	85,10 ±2,15	0,1
HR, bpm	70,80 ±2,25	70,35 ±2,50	69,65 ±2,44	-	68,15 ±2,02	-

Therefore *Lavandula angustifolia* EO being in low concentration improved psychoemotional state of tested people, as well as rose efficiency of mental work (proof test). But it actually didn't affect on more complicated mental work.

As a result principal effects of *Lavandula angustifolia* EO are improvement of psychoemotional state and stimulation of simple mental processes. This essential oil possesses the hypotensive effect what makes possible to put it into practice for work with people suffering from hypertension.

It's interesting that pointed positive changes appeared in case of low EO concentration – 0,1 mg/m³.

Conclusions

1. *Lavandula angustifolia* EO improved psychoemotional state of test participants a lot.
2. *Lavandula angustifolia* EO stimulated mental capacity only in case of simple work. More complicated work was inhibited.
3. *Lavandula angustifolia* EO possesses hypotensive effect.

References

1. Karvasarsky B.D. Klinicheskaya psikhologiya. Uchebnik dlya vuzov. CPb.: Izdatelstvo "Piter", 2004. – 553 s.
2. Lakin G.F. Biometriya. – M.: Izd-vo "Vysshaya shkola", 1989. – 291 s.
3. Osnovy psikhologii: Praktikum / Red.-sost. L.D. Stolyarenko. – Rostov-na-Donu: Feniks, 2002. – 704 s.
4. Praktikum po psikhologii / Pod red. A.N. Leontjeva, B. Hyppenreiter. – Izd. Mosk.un-ta, 1972. – 248 s.
5. Tonkovtseva V.V., Yarosh A.M., Piven I.P., Soiko V.V. Osobennosti vliyaniya efirnogo masla lavandy na phone psikhorelaksatsii programmy na nervnuyu system cheloveka // Tavrichesky zhurnal psikhologii (Acta Psychiatrica, Psychoterapeutica et Ethologica Tavrica) 2009. – Tom 13. – Vyp. 4 (49).
6. Cavanagh HM, Wilkinson JM Biological activities of lavender essential oil // Phytother Res. 2002 Jun;16(4):301-308.
7. Denner SS *Lavandula angustifolia* Miller: English lavender // Holist Nurs Pract. 2009 Jan-Feb;23(1):57-64. doi: 10.1097/01.HNP.0000343210.56710.fc.
8. Effati-Daryani F, Mohammad-Alizadeh-Charandabi S, Mirghafourvand M, Taghizadeh M, Mohammadi A Effect of Lavender Cream with or without Foot-bath on

Anxiety, Stress and Depression in Pregnancy: a Randomized Placebo-Controlled Trial // *J Caring Sci.* 2015 Mar 1;4(1):63-73. doi: 10.5681/jcs.2015.007. eCollection 2015.

9. *Koulivand P.H., Ghadiri M.K., Gorji A.* Lavender and the Nervous System // *Evid Based Complement Alternat Med.* 2013; 2013: 681304. Published online 2013 Mar 14. doi: 10.1155/2013/681304

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Lavándula Angustifólia essential oil (EO) in concentration 0,1 mg/m³ and its effect on psychophysiological state of elderly people were investigated in terms of the research. Improvement of psychoemotional state and simple mental processes stimulation were the most pronounced results of *Lavándula Angustifólia* EO effect on human higher nervous activity. This essential oil possesses the hypotensive effect what makes possible to put it into practice for work with people suffering from hypertension.

Key words: *essential oil, aroma session, aromatherapy, Lavándula Angustifólia, psychorelaxing record, mental capacity, psychoemotional state.*

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PHYSIOLOGICAL OBJECTIFICATION OF RECREATIONAL MEASUREMENTS. AROMA IMPACT AS A STUDY CASE

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Introduction

Nowadays having definite achievements in the field of medicine and biological researches, including areas of balneology and recreational medicine, scientists debate concept of personalized approach [11, 12], what is capable to improve quality of diagnostics, correction and treatment. Development of this direction is important in the field of natural correctional and therapeutic factors, as standartization of their usage making individual rehabilitational programs needs more attention, while physiological mechanisms hasn't been investigated enough. All of these require modern diagnostics facilities that make possible to reveal effect on a certain patient, directly in given recreational conditions and develop the optimal correctional program for him. For instance, effect of health path, organized in the zone with blooming flowers is supposed to be different from the one organized in the steppe landscape.

Complex impact of recreational factors combinations is polymodal and provokes synergetic effect, especially in case of aroma influence [8]. Like essential oils (EO), being preformed natural factors, as flower aromas during blooming are multicomponent substances, and their impacts are grounded by complex influences of all substances, but not separate chemical mechanisms. Synergism influence has the following construction: if two or three EO components affecting even in small dosages, but simultaneously, they demonstrate extra activity in comparison with their effects working in consecutive order.