

Effect of Inhalation of Essential Oil of *Rosa Damascena* Mill. on Psychomotor Functions in Human

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Abstract: Some studies document that odorants influence in sympathetic and parasympathetic nervous systems, and neurophysiological brain activity. Odors compounds can act on the neuroendocrine system, neurotransmitters and neuromodulators, influencing psychological behavior as well as body function. The study was conducted in 20 individuals in each test to analyze the effects of essential oil inhalation on psychomotor performance in the healthy volunteers. Two tests were performed in the present study (1) SLCT (six letter cancellation test) and (2) DLST (digit letter substitution test). These tests were carried out for the assessment of psychopharmacological activity of essential oil of *Rosa damascena* Mill., in healthy young human individuals belonging to the age group 18 to 22 years. The results of the psychomotor performance test in healthy human individuals revealed that there was improvement in psychomotor functions.

Key words: *Rosa damascene* Mill., essential oil, psychopharmacological activity.

1. Introduction

The psychomotor performance of an individual is a complex phenomenon resulting from co-ordination of sensory and motor systems through integrative and organizational processes of the central nervous system. The effects of drugs on psychomotor performance have been investigated using a variety of techniques in this context, paper and pencil tests are attractive because they do not need complex equipment and are easy to administer and replicate. These tests also help to isolate the major components of performance such as detection, perception, recognition, processing and integration [1, 2].

The evaluation of the effects of the aroma inhalation of rose oil in healthy human individuals was performed by two sub-tests, viz. SLCT (six letter cancellation test) and DLST (digit letter substitution test) in the healthy human individuals. In the present study psychopharmacological effects of the essential oil of rose were evaluated in 20 young healthy human

individuals, through two psychomotor performance tests, SLCT and DLST.

2. Methodology

2.1 SLCT

This test was performed by the method described by Natu and Agarwal [2]. In the present study, this test was carried out for the assessment of psychopharmacological activity of essential oil of rose in healthy young human individuals belonging to the age group 18 to 22 years. The test was performed before and after 45 min of inhalation of inhalation of Essential oil by the method of “*Lakhlakha*” (direct inhalation method) of Unani Aromatherapy.

The individuals were asked to keep the bottle of essential oil of rose close to the nostrils for 5 min, so that the oil would be inhaled by each inspiration movement. The work sheet used for the test (see Annexure) was consisting of 3 parts:

- (1) Instructions and identification of the students.
- (2) The key, mentioning 6 target letters.
- (3) The working section.

The working section displayed randomized English

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alphabets arranged in 22 row and 14 columns. The individuals were asked to cancel as many target alphabets as possible in the specified time of 90 s. The letter cancellation was asked to be undertaken in a horizontal, vertical or randomized manner by selecting a particular key letter.

The total number of cancellations and wrong cancellations for each individual were scored. To avoid the effect of memory during repeated administration, parallel worksheets were prepared by changing the 6 key letters and the sequence of the letters randomly in the working section.

2.2 DLST

This test was performed by the method of Natu and Agarwal [3]. In the present study, this test was carried out for the assessment of psychopharmacological activity of essential oil of rose in healthy young human individuals belonging to the age group 18 to 22 years. The test was performed before and after 45 min of inhalation of Rose oil by the method of “*Lakhlakha*” (direct inhalation method).

The individuals were asked to keep the bottle of essential oil of Rose close to the nostrils for 5 min, so that the oil could be inhaled by each inspiration breath. The worksheet (see Annexure) consisted of 3 parts.

- (1) Instructions and identification of the students.
- (2) The key, mentioning 6 target letters.
- (3) The working section.

The working section displays randomized digits arranged in row and columns. The individuals are asked to substitution as many target digit as possible in the specified time of 90 s. The letter substitution may be undertaken in a horizontal, vertical or randomized manner by selecting a particular key digit.

The total number of substitution and wrong substitution are scored. Normally, 1-2 practice sessions are necessary to obtain a stable baseline “net score” which is obtained by deducting wrong

substitution from the total cancellations attempted.

To avoid the effect of memory during repeated administration, parallel worksheets need to be prepared either by changing the digit-letters pairing in the key or by changing the sequence of digit randomly in the working section.

The worksheet has 12 rows and 8 columns. In the specified time of 90 s, no individual is likely to complete the task. The net score for each individual should be recorded.

3. Results and Discussion

The results of the psychomotor performance test in healthy human individuals, revealed that in the SLCT, the difference of the mean scores of before and after inhalation of rose oil was not significant. The total mean score was also nearly the same before and after inhalation. The result of the DLST revealed that the mean score after inhalation of rose oil was markedly increased in comparison to the mean score that was recorded before inhalation; and extremely significant ($p = 0.0002$) difference was found in the before and after inhalation scores. It means that the DLST is elucidating clear indications of improvement in the psychomotor performance due to rose oil aroma inhalation. As described by Natu and Agarwal [2] any improvement in psychomotor performance through the above test reveals improvement in the major components of performance such as detection, perception, recognition, processing and integration etc. Therefore, it becomes clear that the aroma of rose oil has positive effect on the above cognitive functions.

According to Silverstone and Turner [4], the impairment of concentration is frequently found in the anxiety states. As revealed in other experiments by the author like open field behavior test in rats and Chimney test in mice in the present study, that the rose oil has shown anti-stress or anti-anxiety activity. The present experiment on human beings is revealing the improvement of psychomotor performance that of

Table 1 Observations table showing analysis of psychomotor performance in humans.

S. No.	SLCT score		DLST score	
	Before	After inhalation	Before	After inhalation
1.	52	39	59	56
2	30	49	48	67
3	54	48	63	80
4	54	43	49	56
5	53	38	51	43
6	38	31	49	55
7	38	43	66	67
8	39	51	63	74
9	45	47	75	82
10.	39	52	70	71
11	46	43	78	93
12	51	56	47	51
13	52	57	69	77
14	50	46	67	75
15	30	41	48	66
16	38	36	71	70
17	43	39	61	79
18	34	32	35	38
19	33	36	55	65
20	45	52	58	70
Mean	43.200	43.950	59.100	66.750
S.E.	1.820	1.688	2.499	3.045
P value	0.7162*		0.0002**	

*Not significant, **extremely significant.

course includes the concentration in the healthy state. That could be an indirect indication of the reduction of anxiety, due to which the concentration had improved. However, the assessment of the anti-anxiety activity of the aroma inhalation of rose in the human individuals suffering from anxiety states would further validate the anti-anxiety activity of the rose oil.

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