

# Application of Aromatherapy and Biogeometry Engineering technology in Textile Weaving

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## ABSTRACT

We can conclude the aim of the research in solving the problem of creation with textile designers in order to get a new methodology for creation that fulfills the proper needs of the textile. We used the motives of biogeometry and its close relationship with the basics of textile designs and textile construction. Two hundred and fifty different designs were applied to study the negative and positive biogeometrical energies to select the best and effective designs. Designs on paper showed different effect when compared with those weaved. We found that these elements helped depressed children to get effective in the use of medical treatment and decreasing the dose.

**Keywords** - Biogeometry, Weaving Design, Energy, Depression, Children.

## I. INTRODUCTION

Depression is one of the most common diseases, and according to who it may become a primary cause of disability in the future. Although there is a wide range of depression treatment strategies, both pharmacological and psychotherapeutic, they are not effective with all patients. Moreover, in many countries of the world, natural medicine remains the most available and sometimes the only form of medical care, also as far as mental health is concerned [1]; [2] Using herbal remedies is perceived by patients as safe, not excessively invasive and having a „holistic” effect on the whole body. Herbal remedies are usually available over the counter and it is not as stigmatising to take them as to take synthetic psychotropic drugs. Studies conducted on subjects with anxiety disorder or mood changes indicate that as many as half of those subjects turn to so called complementary medicine. Yet physicians often do not understand the underlying cause of such behavior and the choices of the patients. Also, they are often unaware of the effects caused by the preparations used by the patients [2]; [3]; [4]. The impacts of the environment on people, it is common to read that environmental factors can act as

stressors. Odors, sound, air quality, temperature and light can affect humans physiologically, affectively (emotionally) and psychosomatically (mentally). The reactions can

lead to positive or negative stress [5];[6]; [7].

Egyptian and the entire world suffer from increasing the depression diseases between the children of age ranged between 8 to 12 years. This research will offer a new technique to treat them by using the motive of depression in biogeometry science in order to make textile designs treated with advanced material based on natural anti depression e.g. lavender. Firstly, a design was selected regardless it is color and direction was chosen on the bases of it is effect on psychological issues especially on depression diseases. 20 Designs were studied with respect to thickness of the each design. Then we started classification for the designs upon to which is giving positive energy or negative energy according to the biogeometrical way of measuring and we chose the best positive 20 designs. These 20 designs were compared with respect to their size, thickness, direction, color, height and distribution for the highest energy effect. The results showed a great effect of the biogeometrical textile designs on the treatment of depression in children. 250 designs were designed with weaving design basics and bigeometry basics. We measured these designs until we selected 20 designs in order to choose the best of them to weave. We selected the best 10 designs and we used the same weaving structure and the same count the same fiber for warp and weft. After weaving we started measuring the material to know which the best effectiveness. Then we started searching for children from age 8-12 years at Abbasia Hospital for Psychiatry. We started examining 30 children before wearing the material and after wearing with the same depression test to measure the material effect. Karim, Ibrahim, Back To A Future For Mankind, Biogeometry Consulting Ltd, 1st edition, 2007, We found 6 of these 10 materials have very high efficiency and we started making statistical analysis to know the best and the worst of the best to make some chemical treatments with

anti-anxiety material in a trial to get a better result in children. J, Robert Gilbert, 2005, Biogeometry and Egyptian temple science [8]; [9]; [10].

Biogeometry is a fascinating holistic science of energy. It enables us to understand life's phenomena in terms of subtle energy interactions, and more importantly, use this awareness and certain skills to create balance and harmony in all aspects of our life. This is achieved through the special use of shape, colour, angle, number layout and more. The methods are simple to do, yet highly potent in the results they achieve!. The aim in Biogeometry is to generate beneficial frequencies and qualities the same as those found in sacred 'power spots' and use them to restore balance and harmonize at all levels, from physical to spiritual. Biogeometry has far-reaching applications ranging from personal growth, health and spirituality, to architecture and design, agriculture, mystical study and many other fields of life and work. The benefits that Biogeometry gives include health and well-being, helping to neutralizing the effects of electromagnetic radiation and other negative factors, harmonizing living / working spaces, and so on. In today's increasingly stressful environments, the awareness and skills of Biogeometry offer proven is effective solutions that can have significant impact on our life and well-being on all levels. The creating harmony and balance through the modern alchemy of form based on ancient wisdom [11]; [12].

Fragrances and natural scents [13]; [1] as anti-depression materials that can be applied by different techniques onto the fabric surface to enhance the effect of biogeometrical designs [14]. Active products as microcapsules having these fragrances [15]; [16]; [17], the action may be based on phase change materials ([18]; [19]; [20]; [21]. The other important technique is the inclusion complex [13] has studied the Effects of aromatherapy (odorless condition, lavender, and hiba oil) on mood and anxiety were investigated in 14 female patients who were being treated with chronic hemodialysis. A control period consisting of natural hospital smells was established before each test session, and then aromatic test conditions were systematically evaluated for odorless conditions as well as aromatic conditions containing lavender and hiba oil aromas. They found the results indicate that in chronic hemodialysis patients hiba oil is an effective, non-invasive means for the treatment of depression and anxiety, and that lavender alleviates *anxiety* [20]; [21].

We aimed in this research to merging between the art and technology. We applied the science of biogeometry and its motives in textile designing. We translated the motives into textile weaving designs and examined them on depressed children. The effectiveness of biogeometrical design were increased by applying suitable antidepressant natural agent (lavender) as a core in inclusion complex based on cyclodextrine.

## II. Experimental Work:

### 2.1 Material and substances:

#### 2.1.1 Paper design:

We designed about 250 designs, 200 using the depression biogeometry motive and 50 with depression, heart, balance, immunity, liver, calming, pituitary and stomach motives upon to the recommendations of Prof. Ibrahim Karim, putting in concern the biogeometry design basics and textile designing basics and here are some examples for both kinds [22]

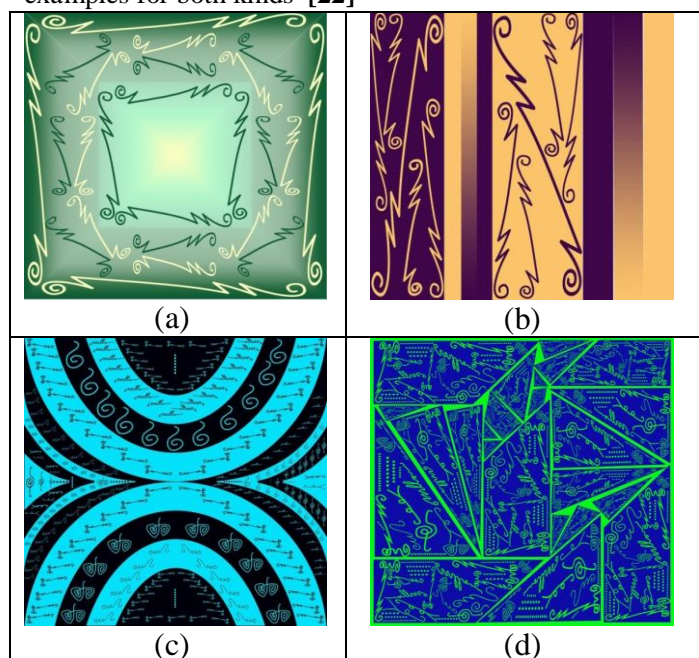


Figure 1: (a,b) Textile designs using only depression biosignature; (c,d) textile designs using depression, stomach, heart, immunity and stability biosignatures.

#### 2.1.2 WEAVED DESIGN:

After measuring the paper designs biogeometrically, we choose 10 designs and started modifying on them in order to be weaved in a loom. We started to put the specification of the material as following:

##### a. LOOM SPECIFICATION:

Italian Picanol Gammax loom of 190 cm, It was manufactured on 1996 with a speed of 360 weft/minute with a positive drafting and pegging system, shuttle ejaculation.

## b. MATERIAL SPECIFICATION:

Cotton fabric of average weight  $135 \text{ g/m}^2$  was used in this work. Brocade textile, jacquard harness strength 1344 cords, design strength in the harness 1320 cords, loom width 190 cm, fabric width in the comb 146.6 cm, repetition width 36.66 cm, number of repetitions in fabric width 4 repetitions, warp count 150/1 denier, white polyester warp 288 yarn, 36 warp yarn/cm, 18 door/cm in the comb, 2 warp yarn/door, weft count 30/2 denier, 25 colored cotton weft /cm and here are some examples for the weaved designs [23].

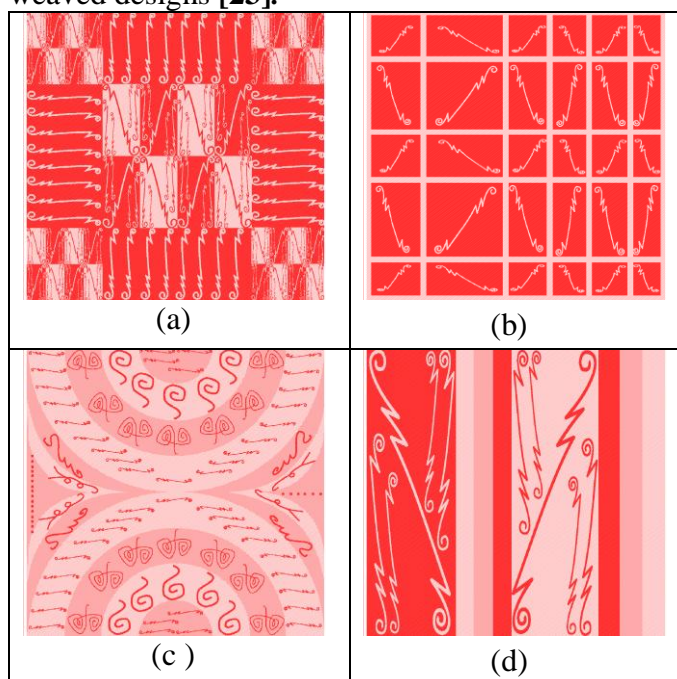


Figure 2: (a,b,c & d) Paper patron for some weaved designs.

### 2.1.3 REAGENTS:

Lavander (*Lavandula species*). The plant material was air-dried at room temperature and powdered. Several extractions (during 24 h at room temperature) with methanol extract [25]. MCT- $\beta$  cyclodextrine, methanol, sodium carbonate were obtained from sigma Aldrich, Egypt. Do not underline any of the headings, or add dashes, colons, etc.

### 2.2 CHILDREN SAMPLE:

We started making art therapy with children from age 8-12 years old by wearing them our fabric, tracing and coloring some biogeometry motives.

We choose 30 children from Abbasia hospital, Cairo, Egypt. With the help of the psychiatrists we choose those children and made for them a test to measure their depression level before and after wearing our fabric and making the art therapy. [24]

### 2.3 TEXTILE FINISHING AND ICLUSION COMPLEX PREPARATION

The fabric was treated with alkali of 30 % (of fabric weight) and liquor ration 1:25, then treated with MCT-  $\beta$  cyclodextrine for 40 minutes. After this treatment the fabric was soaked in lavender extract for two hours at  $40^{\circ}\text{C}$ .

### 2.4 THE RATE OF FRAGRANCE RELEASE:

The fabric treated with the inclusion compound was extracted by alcohol for 12 hours. The fragrance concentration on the fabric was measured on Perkin Elmer UV/VIS spectrophotometer Lambda 35, UK. The excitation wavelength was 276 nm (on reflection mode). [29]. The scent was also smelled by three children to test the smell release (2 childrens boy and one girl).

### 2.5 STATISTICAL ANALYSIS:

We tried reading our fabric effect on children by making some statistical analysis from the results of the test we did before and after the art therapy. Unless high readings were an indicate for high level of depression, we set that they have all the same degree. There are some of the readings (XI). After doing eta analysis and arithmetic mean we had to classify which of the fabrics is more efficient as shown in that graph

## III. RESULTS & DISCUSSION:

### 3-1 DESIGNING THE MOTIVES AND TRANSFERINGIT TO WEAVING DESIGN ON TEXTILE:

The samples in figure 3 can be explained as follow:  
**Sample (1):** Multiple of 4 for the biogeometry depression motive of different sizes as groups distributed randomly using two calming colors black and rose. This sample was positive energy on

paper and weaved. it was the highest sample when we examined it in children.

**Sample (2):** Multiple of 4 of biogeometry depression motive of different sizes and directions. They was located inside 2 squares and around the squares. Two colors are calming purple and light yellow; 4 squares are gradient between purple and yellow. We used squares because the 90 degree angel gives more efficiency for the biogeometry motives. We measured this sample in paper and were positive also when we weaved after exchanging the gradient stripe to a frank color we measured its positive energy and it was the second highest sample when we examined it in children.

**Sample (3):** 5 biogeometry depression motive in different sizes and directions inside 2 squares with 6 stripes in two colors both of them are calming purple and light yellow, 2 stripes are gradient between purple and yellow. We used squares because the 90 degree angel gives more efficiency for the biogeometry motives. We measured this sample in paper and were negative also when we weaved after exchanging the gradient stripe to a frank color we measured its negative energy and it was the third lowest sample when we examined it in children in males but positive in females.

**Sample (4):** Multiple of 4 of the biogeometry depression motive in different sizes and directions inside 2 squares and around the squares in two colors both of them are calming purple and light yellow. We used squares because the 90 degree angel gives more efficiency for the biogeometry motives. We measured this sample in paper and

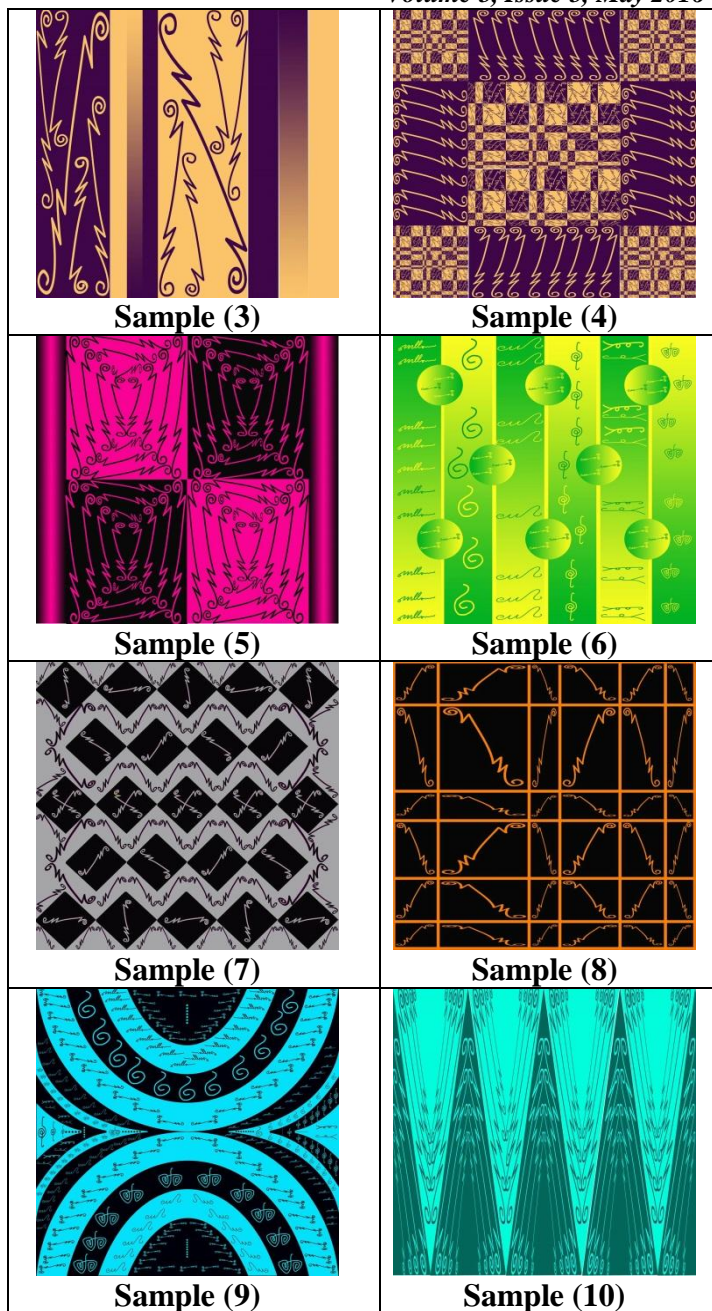
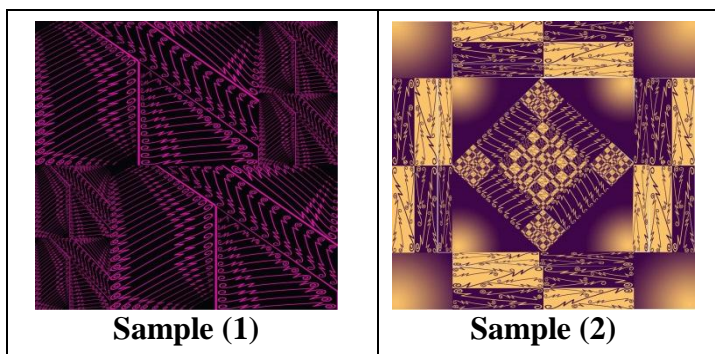


Figure (3): Chosen weaved samples. were negative also when we weaved we measured its negative energy and it was the sixth lowest sample when we examined it in children.

**Sample (5):** Multiple of 4 for the biogeometry depression motive in different sizes inside 4 squares with 4 stripes in two colors both of them are calming black and rose. We used squares because the 90 degree angel gives more efficiency for the biogeometry motives specially that we used the same angle with the motives' position . We measured this sample in paper and were positive also when we weaved after exchanging the gradient stripe to a frank color we measured its

positive energy and it was the highest sample when we examined it in children.

**Sample (6):** Multiple of 4 of the biogeometry depression, immunity, balance, stomach, heart, liver, calming and , pituitary motive in different directions inside 6 stripes and 8 circles using for both of them gradient between 2 calming colors light green and light yellow. We measured this sample in paper and were negative also when we weaved after exchanging the gradient to frank colors we measured its negative energy and it was the fifth lowest positive sample when we examined it in children.

**Sample (7): K2** Biogeometry depression motive in different directions inside and around squares in two colors both of them are calming black and gray. We used squares because the 90 degree angel gives more efficiency for the biogeometry motives specially that we used the same angle with the motives' position also there were crossing and contact in the sides of the surrounding motives. We measured this sample in paper and were positive also when we measured its positive energy and it was the second highest sample when we examined it in children.

and were positive also when we weaved we measured its negative energy and it was the best negative sample when we examined it in children.

### 3-2 STATISTICAL ANALYSIS

We choose 10 samples to be examined on children and here are the results of the progress in the children psychological state.

**Sample (8):** Multiple of 4 for the biogeometry depression motive in different directions inside squares in two colors both of them are calming black and light orange. We used squares because the 90 degree angel gives more efficiency for the biogeometry motives specially that we used the same angle with the motives' position. We measured this sample in paper and were positive also when we measured its negative energy and it was the third negative sample when we examined it in children.

**Sample (9):** Multiple of 4 of the biogeometry depression, immunity, balance, stomach, heart, liver, calming and , pituitary motive in different sizes and directions inside 4 half circle in two colors both of them are calming blue and light

**Sample (10):** Multiple of 4 for the biogeometry depression motive in different sizes inside 4 triangles two colors both of them are calming green and light green. We measured this sample in paper and were positive also when we weaved we measured its positive energy and it was the lowest positive sample when we examined it in children.

Table (1) Depression average results before and after exposing to biogeometrical design.

SN	change in Depression results of sample									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	20.00	16.00	-6.52	5.45	-10.20	-12.50	-19.57	-4.00	2.00	2.00
2	14.81	9.80	-2.04	-13.64	-19.05	7.41	5.56	-3.85	1.85	1.85
3	16.33	10.20	0.00	-21.95	-12.24	-10.00	-12.24	0.00	-4.08	-8.51
4	30.36	14.55	-3.92	1.85	-1.92	-1.92	-12.77	-12.77	1.79	1.79
5	17.65	9.43	-5.88	-5.88	-5.88	-1.96	-1.96	-1.96	0.00	0.00
6	2.13	16.33	-4.76	6.38	6.38	0.00	-14.89	-14.89	0.00	0.00
7	13.33	3.85	0.00	0.00	9.09	13.79	16.36	23.33	5.00	1.72
8	22.41	3.51	-7.84	-5.77	1.96	-3.70	-3.70	-14.29	0.00	3.51
9	20.34	16.36	1.69	-6.00	-1.92	-3.92	10.17	1.85	3.39	3.39
10	25.00	5.88	-8.00	-3.85	-3.85	-3.85	-10.20	-3.85	0.00	0.00
11	6.25	0.00	5.45	-8.33	-16.67	-16.67	-16.67	-16.67	-4.17	-4.17
12	6.38	4.08	-12.00	-19.15	-1.82	-19.15	-19.15	-19.15	0.00	0.00
13	0.00	6.82	-18.18	-18.18	-18.18	-18.18	-22.73	-22.73	0.00	0.00
14	12.24	10.64	-2.00	-4.08	-21.43	-4.08	-4.08	-4.08	0.00	0.00
15	19.57	2.44	-15.22	-15.22	3.64	-15.22	-15.22	-15.22	0.00	0.00
16	21.05	13.56	0.00	8.77	-4.00	-4.00	-26.83	-4.00	3.51	-1.85
17	9.80	1.96	1.92	0.00	1.96	1.96	0.00	0.00	7.84	7.84
18	0.00	8.70	-8.00	-35.00	-8.00	-35.00	-35.00	1.82	0.00	0.00
19	2.38	4.65	-13.95	-28.57	-28.57	-26.19	-26.19	11.67	0.00	0.00
20	14.04	18.18	-8.00	-3.85	0.00	-5.88	1.75	-1.82	7.02	-3.85
21	9.09	14.55	-8.16	-3.92	-8.00	0.00	-5.88	-11.11	-1.82	-1.82
22	28.57	4.35	-4.55	6.12	6.12	6.12	6.12	6.12	-4.08	-4.08
23	4.65	2.38	3.51	-27.91	-10.00	-27.91	6.90	5.26	0.00	4.35
24	14.29	17.02	-19.05	-2.04	-2.04	-10.20	-10.20	-10.20	0.00	-4.26
25	9.26	17.31	1.96	7.41	0.00	7.41	-6.38	7.41	-5.56	-1.85
26	19.64	7.41	-6.00	1.85	-3.92	-1.92	-10.42	-1.92	0.00	0.00
27	20.34	8.93	5.56	-2.00	5.56	8.93	-3.85	-8.00	3.57	3.57
28	21.82	3.51	-16.67	-5.66	-7.41	-6.00	-1.92	-8.51	0.00	-7.41
29	27.27	0.00	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00	-4.00
30	16.67	27.78	-9.62	-3.77	-1.85	-5.77	-5.56	3.77	1.85	5.56

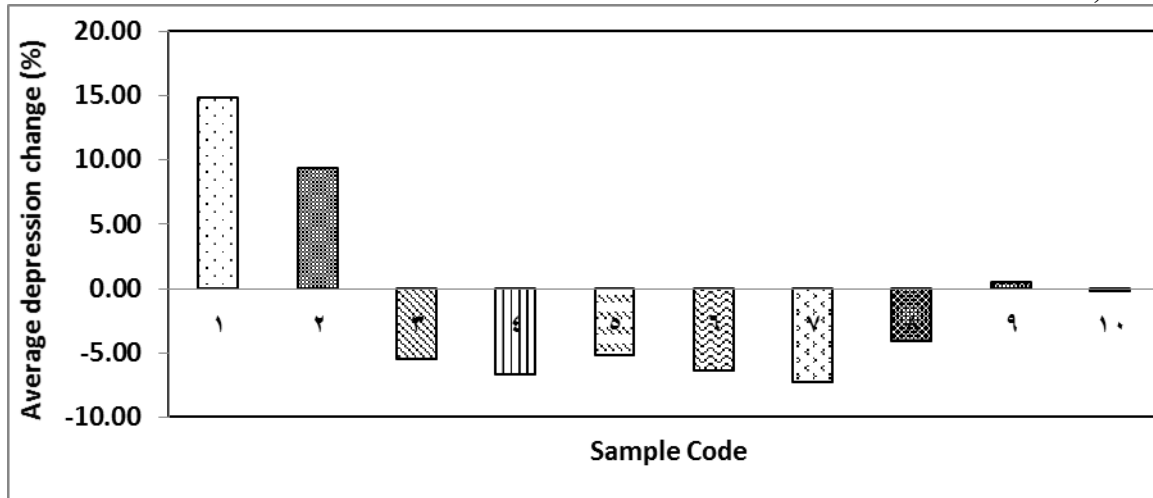


Figure (4): Average change in depression reading of the ten weaved samples (before and after exposing to biogeometrical designs)

From the results of table 1 and figure 4 we can get the following findings:

- ✓ Using biogeometry motives in a count of multiples of number 4 gave more efficiency to the fabric.
- ✓ Using very fine weft fibers with a high set gave us a high opportunity not to destroy the motive curve and to get the right energy path.
- ✓ Using calming colors such as blue, purple, green and gray gave a higher effect than using anxiety colors such as yellow, red and dark pink.
- ✓ Measuring energy by geometrical pendulum on paper design is totally different than from weaved design than from chemically treated design.
- ✓ Crosses or even contact between the biogeometry motives together makes its energy path destroy, unless that this is in violation with some basics of design.

### 3-3 INCLUSION COMPLEX OF LAVEDER ON CYCLODEXTRINE:

Lavender was used as an anti-anxiety substance to treat the best and the worst fabric we experimented on children. (Under process) [27]; The suggested synergistic effect may depend on the postulated effect of lavender on the GAGAergic system and its anxiolytic effect [28]. Figure 4 and 5 shows the mechanism of

lavender inclusion in cyclodextrine after reacting the MCT-  $\beta$  cyclodextrine onto the fabric surface. The outer surface of the cyclodextrin molecules is hydrophilic, and on complex formation the hydrophobic part of the phospholipid molecules will be inserted into the a polar cavity of the cyclodextrine, complex formation results in decreased lipophilicity of the guest molecule [29].

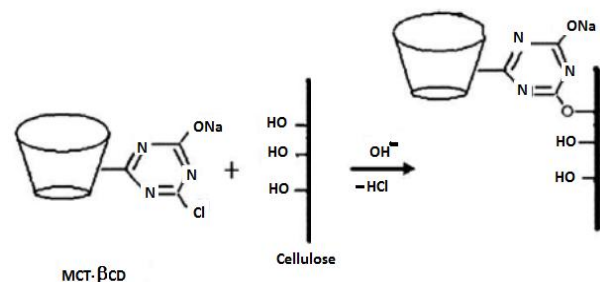


Figure (5) Inclusion complex of lavender in cyclodextrin [30]

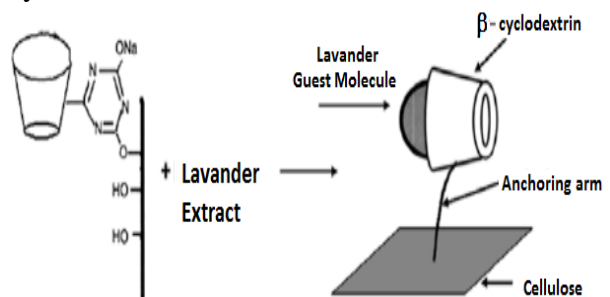


Figure (6) Inclusion complex of lavender in cyclodextrin [31]

Table (2): Rate of Fragrance release %

Period (days)	Rate of Fragrance release %	Sensation smell
0	100	+++++
15	91	+++
30	79	++
60	58	+
90	52	+

A sensorial evaluation of results was also performed by a group of 3 well-trained children (2 boys and 1 girl), in insulated booths where the fabrics were kept on an open desk at room temperature, and smelled (0 to 90 days) in order to sense the scents. The test panel evaluation results were listed in Table 2.

#### IV. CONCLUSION

To conclude we can say that the merge between biogeometry, textile engineering & designing and medical field is a very important step in dispensing medicines in psychiatry field and created a new creative methodology in designing using some basics of textile designing (loom specification or material specification) with color basics with biogeometry basics in order to get the PG3 energy needed to every organ in the body to work well. Micro-encapsulation can effectively control the release rate of the fragrance compounds and essential oils as required, which ensures the storage life of volatile substances. We may choose various products such as fibres, fabrics, non-fabrics and garments to enjoy the pharmaceutical and emotional effects of aromatherapeutic textiles. We believe that aromatherapy and aromatherapeutic textiles are the first choice for people who want to keep healthy in their daily life, and these textiles will become a fashion in the near future.

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