

Effect of *Cynara scolymus* (artichoke) in Homeopathic Doses on Body Mass Index in Obese and Overweight Patients

PEÑA CISNEROS ERIK MISAEL¹, TORRES MENDOZA BLANCA MIRIAM DE GUADALUPE², DEL CASTILLO SALAZAR GÓMEZ MARÍA PAOLA³ and RUVALCABA LEDEZMA JESÚS CARLOS^{4*}

¹Professor Researcher (UNAG) Anthropological University of Guadalajara, in the degree in homeopathy. Jalisco, Mexico.

²Profesor Research of the Master of Clinical Nutrition at the (UNIVA) University Atemajac Valley, Guadalajara Jalisco, Mexico.

³Nutrition Counselor, Atemajac Valley University, Student of the Master of Clinical Nutrition UAD Autonomous University of Durango.

^{4*}Full time Research Professor in the Academic Area of Medicine, Coordinator of the Master's Degree in Health Sciences with emphasis on Public Health (UAEH), Autonomous University of the State of Hidalgo, Mexico.

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ABSTRACT

In Mexico obesity has become a public health problem, several plants have been used for weight loss, including the Artichoke (*Cynarascolymus*), with that the Aim of this research was focused on evaluating the effect of *Cynarascolymus* in homeopathic doses on body mass index in obese and overweight patients at a private clinic in the metropolitan area of Guadalajara Jalisco. Material and methods. We conducted an aleatory controlled clinical trial in 34 adults aged 20 to 52 years old, overweight and with obesity (BMI > 27 kg/m²), by random sampling. They were invited to participate and they signed a written informed consent form. They took blood samples and evaluated, cholesterol, triglycerides and glucose. *Cynarascolymus* was administered in homeopathic doses and the body mass index (BMI) was measured for 6 appointments once every 15 days. The data was analyzed using SPSS 17. Frequencies were compared by chi square and continuous quantitative data was performed on ANOVA and T tests. Results 80% of people suffer from gastrointestinal symptoms and had a family history in obesity. BMI had no significance in the analysis of independent samples t test. Significant difference was detected between the first and third visit, ANOVA with significant F critical for weight change. Conclusions: homeopathic doses of *Cynarascolymus* no impact on the body mass index compared to placebo, but significant weight change.

Key words: Obesity, *Cynarascolymus*, body mass index, dose homeopathic, potencies.

INTRODUCTION

Since 1980, the number of citizens with obesity had been duplicated in the world. According to the World Health Organization (WHO), in 2008 there were 1500 million of adults with overweight; 200 million of men and 300 million of women were

obese [1]. The concept of overweight by WHO is defined as the presence of a body mass index as the same or greater than 25 Kg/m² and obesity as an index greater or the same as 30 Kg/m² or as a waist-hip ratio index superior to 0.85m in women and 0.9 in men [2]. In the year 2001, the WHO reported that from 56 million of deaths, a 60%

belonged to nontransmissible diseases related to the problem of obesity. The actual prevalence has reached very high levels, as the same as the increasing annual rate, which is increasing drastically [3].

In Mexico, the problem of overweight and obesity has been increasing alarmingly [4], the existing numbers report that people who are older than 20 years old reflect a prevalence of overweight and obesity which has increased a lot; 71.9% of Mexican women and 66.7% of Mexican men have problems with obesity [5]. This increment is the cause of suffering diverse diseases that are related to such problem. The percentage of nontransmissible diseases has been increasing getting to the following numbers: in 1980, it was 49.8% and in 2000, it increased to 73.3% [6].

The problem of obesity has been increasing in all age groups, genders, and social classes making it a problem for public health in Mexico [7]. The Artichoke (*Cynara scolymus*) could be a plant that could be used for losing weight, but there is no scientific studies established that affirm it. Moreover, other medications have also been used for weight loss in combination with other components such as L-carnitina [8,13].

Homeopathic therapy, obesity, and *Cynara scolymus*

Homeopathy is based on the law of similarity, which mentions in a concrete form that "Similar can cure similar", in other words, a disease can be treated with a substance that is able to produce similar symptoms to those that the patient feels [9,10]. The roman medics, overall Celusus, Galeno, and Dioscorides, enhanced the knowledge and the comprehension about the structure and function of the human body, but the theory of Hippocrates of "similar can cure similar" and his idea of the individual prescription for each patient was used disregarded [11]. Homeopathy was discovered by Cristiano Federico Samuel Hahnemann, who was born in Meissen, Germany on April 1ST, 1755[12].

After conducting several experimental investigations, in 1796, Hahnemann published his

work "Essay about a new method for discovering the curative properties on the medicinal substances" which mentions about the methods employed nowadays [13]. In his essay, Hahnemann, mentions the results of his first experiments on a healthy human group and the use of some plants like: *China officinalis*, *Chamomillamatricaria*, *Árnicamontana*, *Belladonna atropa*, *Aconitum napellus*, *Pulsatillanigricans*, *Nuxmoschata*, *Ignatiaamara*, *Digitalis purpurea*, *Ipecacuanacephaelis*, *Papaversomniferum* *Opium*, *Rhustoxicodendron* and **lead, arsenic, and mercury**. In this work, Hahnemann published the beginning of homeopathy in which he expressed that such plants and the minerals have medicinal properties when being employed in a diluted and dynamic form. It is worth mentioning that such properties have been experimented on healthy people and have produced symptoms which shows that these are capable of curing and healing in sick people.

Obesity historic facts

According the WHO obesity is defined as the presence of a body mass index as the same or greater than 25 Kg/m² and obesity as an index greater or the same as 30 Kg/m² or as a waist-hip ratio index superior to 0.85m in women and 0.9 in men [2]. In the past, (Bray, 1990) this pathology was known by Hippocrates (Cos 460 a.C.-Larissa 355 a.C.). He established that several types of humor including the yellow bile, black bile, and blood in a balanced state form the organism. Obesity is reflected because of the unbalance in the blood.

For Galeno (131-201 d.C.) [15], there are three concepts to define a person: pachis (fat), efsarkos (really fat), and polisarkos (obese), this last concept refers to a person who eats meat in excess, cannot walk or sweat, when sitting down he/her cannot reach the table because his/her abdomen doesn't allow it, has difficulties when breathing and cannot do his/her hygiene correctly because his/her obesity doesn't allow it, with a humid and hot aspect, smooth skin, great quantity of body mass and extreme volume. In relation to Buddhism, in Japan [16], those were considered as a "karmic effect" in obesity; it was a punishment to abundance and allowed eating more than

necessary. Nowadays, there are many sumo competitors who present morbid obesity because it is necessary for practicing such sport.

Cynara scolymus (Artichoke) is an herbaceous plant of the Asteracea Family, it is commonly used in Italy, France, and Spain. The following names are given: Alcachofera in Spanish, alcaucil in Spanish, artichoke, artichaut in French, carciofo in Italian, and artichoke in German. Columnella mentioned that the name of *Cynara* was given to ash that was utilized as fertilizer in the fields of the artichoke [17].

It has its origins in septentrional Africa, Canary Islands, Egypt, and the Oriental Mediterranean. The name has been obtained from the Arabic Al Karsuf, and the term *Cynara* from Latin *canina* because of the form of dogs teeth that the leaves have. *Cynara scolymus* is a perenne plant, its stem grows up to 50 cm long, it has basal type of leaves that grow up to 1m long, grey in its underside, lanceolated, very segmented; it presents tubular leaves, purple or blue, covered by a number of bractecoriaceas [18].

It contains several alkaloids, among them: chlorogenic acid, caffeic acid, cinaropicrina, cinarina being the responsible of the sour flavor of the Artichoke being able to stimulate the bile secretion and the diuretic action. It contains mucilage, essential oil, phytosterols, vitamins A, B1, B2, and C. It also contains potassium salts and magnesium salts. Also it contains flavonoids derived from the luteolin (cinarósidos, cinaratríosidos, escolimosidos); enzymes (catalase, oxidases, peroxidases, cinarasa, ascorbinasa, proteases), insulin, cyanidol, tannins among others [19].

In a chromatographic study conducted by Doctor Orlovskaya he found 15 amino acids, from which nine are considered as essential: threonine, valine, isoleucine, leucine, lysine, phenylalanine, histidine, arginine, and methionine [19]. It also has chlorogenic acid and cinarina, phenolics that are derived from caffeic acid. De Malach *et al* (1976) found that the use of cinarina has been effective in the treatment of hepatobiliary, hyperlipidemia

diseases and cholesterol metabolism. The leaves of *Cynara scolymus* contain the following minerals: Sodium, Potassium, Calcium, Magnesium, Phosphorus, Copper, Zinc, Chrome, Magnesium, Silica, and Iron. Elements such as Bismuth, Arsenic, Cadmium, Antimony, and Thallium which are toxic substances are not accumulated in the plant [20].

Aim

Evaluate the effect of *Cynara scolymus* in homeopathic doses on body mass index on obese and overweight patients in a private clinic in the metropolitan area of Guadalajara, Jalisco.

MATERIAL AND METHODS

Study Design

A controlled random clinical trial was performed, a double-blind in 34 adult patients who were from 20 to 52 years old with obesity and overweight without other pathologies such as diabetes, hypertension, hypercholesterolemia and hypertriglyceridemia. **Sample:** The quantity of the patients were obtained according to the following

$$n = \frac{2(Z_{\alpha} + Z_{\beta})^2 * S^2}{d^2}$$

Sample Technique

Aleatory. Hering® laboratory was requested (Homeopathic laboratory) to produce *Cynara scolymus* medicine to the 6CH, 12CH, and 30CH potencies in amber colored jars with 30 ml each, one same as placebo. They were asked to not inform what type of potency each jar were, but to hand a list of medicines numbered from 1 to 40 at the beginning of the investigation. The list was obtained by lists made randomly with the quantity that is necessary in numbers, taken by the website www.randomizer.org, that way the patient does not know what potency he is given, neither the investigator. Among the jars of the numbered medicine, the patients were contemplated for each potency as the same as the patients in the control group that were administered placebo.

Cynara scolymus

60 amber glass jars with the dynamic medicine of *Cynara scolymus* for the potencies 6CH, 12 CH y 30 CH, and placebo

prepared by the Homeopathic Laboratory Hering®. 500 plastic jars with 30 ml with a dropper and lid, 500 labels for jars with droppers.

Methods and techniques: Administration of *Cynara scolymus*

With the dilutions of the *Cynarascolymus* that the Hering® laboratory and the correspondent potencies a 30 ml jar was prepared with 30 drops of the dilution and the rest of the jar was filled with potable water so they could drink it sterilized, the patient was asked to drink a dose of 10 drops three times a day and every 15 days he/she was given a new jar to continue with the correspondent treatment. The patients were asked to inform to the investigator if the jars with the dilutions with *Cynara scolymus* were missing so they could be given a new one.

Adherence to the intake of *Cynara scolymus*

With the intention of evaluating an adequate adherence in the consumption of *Cynara scolymus* and the type of reactions that could be presented, the patients were asked to take the jars they were given in each appointment in order to make the comparison of the quantity of medicine consumed. Before turning in the jar, they counted the drops of the 30 ml jars. It was found that each jar could contain 328 drops, for which the measurement of how many drops must have been used during the lapsed time resulting in 225 drops during 15 days, to be able to evaluate the function of the treatment. It's important to mention that they were given two dropper jars in case any of them got lost, for each visit they did, a survey about addiction to treatment was also applied.

Determination of the BMI: Weight

It was determined according to a manual of procedures published by the Health Ministry which mentions that the weight should be taken with minimal quantity of clothes and shoes. Therefore, the participants were asked to wear light clothing, place both feet parallel and centered in the scale, in front of the examiner, with the body lifted, sight towards the front, without moving and with the arms naturally hanging at the sides of the body.

Height

A SECA® 206 stadiometer was used. The people were asked to take off their shoes, hats and accessories that could interfere in the taking of the height. The person is placed below the stadiometer, with their feet separate in the toes and the heels slightly touching, the head, back, heels and gluteus should touch the wall and the arms should be hanging naturally at the sides of the body. The head must have a Frankfurt position. The stadiometer was lowered and the weight was registered correctly.

Formula and classification of BMI

The BMI is obtained by the division of the weight and the height in squared meters, this is described according to the classification of WHO which signals:

General data and clinical history

Participants were questioned using a predesigned medical record format in a particular office, using a structured questionnaire which included: general identification data, current history of drug use: use of drugs like laxatives, diuretics, antacids, analgesics, and contraceptives for women. Past medical history: bowel disease, family history inherited hypertension, diabetes, obesity, cancer, hypercholesterolemia, hypertriglyceridemia, nutritional habits: frequency and timing of meals and snacks per day, physical activity performed (very light, light, moderate, heavy or exceptional), days per week and lengths of time per exercise session.

Serum concentration in fasting

In the first consultation of: cholesterol, triglycerides and blood glucose. Food frequency and characteristics of their appetite (Well, fair or poor), background information about using drugs to lose weight, number of drinks per day, consumption of milk per week, days eating cereal and tubers, days consuming fatty cereals in the week, days per week consuming vegetables and fruits, days per week in which fat and sugar are consumed.

General Plan

It was proceeded to invite people to participate in the investigation, with promotion in a

private clinic, in private universities and with nutritionist that derived the patients to participate in the investigation for having a BMI higher than 25 kg/m². Patients were told about the characteristics of the investigation and were invited to participate. Once accepted they were asked to sign a consent form.

The patients were requested clinical examinations: blood glucose, cholesterol and triglycerides, if the results were reported as normal they were included in the investigation.

In the private clinic, the patient was interrogated with a clinical history instrument and the patients that cover the inclusion criteria were randomized by the Hering® laboratory.

Patients were assessed every 15 days in 6 occasions (3 months) and in each occasion the BMI was measured and the correspondent doses of *Cynara scolymus* were administered during 15 days choosing the correspondent number in random manner. In the end the results were analyzed with SPSS® and results and conclusions were obtained.

Bioethical considerations

This investigation was linked to the Declaration of Helsinki and the General Law of Mexican Health. It is a study with low risks and requires a consent form from the participant. The present study had dynamic potencies in scales in which the dose of *Cynara scolymus* does not present toxicity and for which it is not necessary to ask for authorized permission by the correspondent authorities, nor is it necessary the registration of a

hospital to realize such investigation, the patient was asked for a signed consent in order to participate in the investigation.

Statistical analysis

The BMI was registered in each visit and posteriorly copied into a database in the program Excel®, right away it was exported in a statistics program SPSS version 17® to analyze the correspondent statistics. Data was described in frequencies and percentages in means and standard deviations. This was performed with the SPSS 17® program. For the comparison of the data, the frequencies were done by non-parametric statistics (chi squared) and for the quantitative data by the parametric tests (T of student). It was considered, to determine a difference, a significant level of p<0.05 and a confidence interval of 95%.

RESULTS

34 people of which 28 were females (82%) male and 6 (18 %) were studied (Table 1) with an age range of 32 ± 9.3 with a minimum of 20 years and maximum 51 years, an average of 33 years as the median (Table 2).

On the course of the study, a male individual was excluded from the investigation because of a fracture on his leg in an accident, regarding females 2(6%) of them were pregnant and had to be excluded, one of them had an appendicitis (3%), and 10 abandoned the treatment in the course of the appointments (30%). The total of people that were excluded from the investigation were 14 (41%). The total of individuals that began the investigation were 34 people (100%), in the

Selection Criteria

Inclusion	Exclusion	Elimination
<ul style="list-style-type: none"> -Male or female patients aged between 20 and 52 years old. -Patients without history of pathologies like diabetes, hypertension, Hypercholesterolemia, and hypertriglyceridemia. -Patients that decided to participate in the study -Body mass index higher than 25 kg/m² 	<ul style="list-style-type: none"> -That allopathic, homeopathic or naturist medicines are used in the study. -That acupuncture or alternative medicine should be used. -They should present psychiatric or genetic diseases that could give a slant in the interrogation or in the process of the study. -Pregnancy or breastfeeding. 	<ul style="list-style-type: none"> - If during the investigation they present a reaction to the medicine or by will if they decide to not participate. -If they decided not to participate once beginning the investigation. -If they abandon the treatment. -Lack of adhesion to the treatment for more than 24 hours in 15 days. -If they modify their exercise habits during the experiment. -If they modify their alimentary habits during the treatment. -If during the experiment they presented some injury during their daily activities and have been intervened surgically. -Pregnancy -Emergency surgeries.

second consultation the same remained, in the third consultation 28 people continued (82%), in the fourth consultation 24 continued (71%), in the fifth consultation 22 (65%), in the final consultation 20 individuals (59%) (Table 3).

It was found that the mean of the BMI of the people in the study in the first appointment was 32.19 kg/m² ±5.44, with presence of minimum values of 25.81 kg/m² and maximum values of 43.5 kg/m². 70% of gastrointestinal problems among

Table. 1: Frequency and percentage of gender in study

Variable	Frequency	Percentage
Female	28	82%
Male	6	18%
Total	34	100%

Source. Direct, 2013

Table. 2: Age distribution of the people under study

Variable	minimum	maximum	median	range
Age	20 years	52 years	33 years	32 ± 9.3 years

Source. Direct, 2013

Table. 3: Participation of people in the study

Variable	1 consultation	2 consultation	3 consultation	4 consultation	5 consultation	6 consultation
People participating in the study	34 (100%)	28 (82%)	28 (82%)	24 (71%)	22 (65%)	20 (50%)

Source. Direct, 2013

Table. 4: Body Mass Index (BMI) of the people under study

Variable	minimum	maximum	median
BMI	25.81 kg/m ²	43.5 kg/m ²	32.19 kg/m ²

Source. Direct, 2013

Table. 5: Comparative Analyses of Body Mass index (BMI) of people in study

Variable	1 consultation	2 consultation	3 consultation	4 consultation	5 consultation	6 consultation
BMI	33.07±5.97	32.86±5.98	32.98±6.22	32.94±6.30	32.91±6.24	33.06±6.25
t inter grups	*(p > 0.05).		*(p > 0.05).			
F versus placebo	(p<0.05).					

Source. Direct, 2013 "was a significant level between the first consultation and the third (p > 0.05), the value F and F critical value, but it didn't result significant versus placebo (p<0.05).

them were diarrhea, constipation, gastritis, nausea, heartburn, vomiting, colitis and problems with their teeth (Table 4).

In this group, 80% of the respondents who completed the treatment consumed no allopathic medicine. 33% reported having a family history in Hypertension, 57 % Diabetes Mellitus, more than 80 % in obesity, 36 % of cancer somewhere in the body, 33 % of hypercholesterolemia and 27% hypertriglyceridemia. Over 80% mentioned having 3 meals a day and 95% mentioned that they ate between meals.

The average of days that these 20 people did exercise was 1 day a week $\pm 1.89.65\%$ of the people who completed that investigation defined that their physical activity went light to very light. 60% reported no using medicine for weight loss. The mean of cholesterol showed that 34 people that had initiated that study was from 165 ± 19.02 mg/dL, triglycerides from 136 ± 16.56 mg / dL and blood glucose of 86 ± 8.5 mg / dL.

The average BMI of the first consultation of the 20 people who completed the study was of 33.07 ± 5.97 kg/m², in the second consultation it was 32.86 ± 5.98 kg/m², in the third consultation 32.98 ± 6.22 kg/m², in the fourth consultation 32.94 ± 6.30 kg/m², in the fifth consultation 32.91 ± 6.24 kg/m² and in the final consultation 33.06 ± 6.25 kg/m². Differences between BMI of the consultations were done comparing the first versus the second, the third versus the first, the fourth versus the first, the fifth versus the first, and the sixth versus the first; an analysis of T test was done on independent samples, which shows that there was a significant level between the first consultation and the third ($p > 0.05$). Lastly, ANOVA was performed to make a comparison on the different samples regarding each medicine per group and placebo, the result was significant in the different groups according to the value F and F critical value, but it did not result significant versus placebo ($p < 0.05$). It was found that the mean for each group increased at the end of the study, with the exception of the 12 CH potency, which decreased, but it was no significant (Table 5).

DISCUSSION

In modern times, the problem of obesity has had a considerable impact on the world and national economy [2]. There have been various studies to help reduce body weight in overweight and obese patients, in terms of the globe artichoke plant there are several studies that have been proven effective in reducing cholesterol levels [21-23]. In mesotherapy, *Cynarascolymus* has been used for weight loss, having results in reduction of higher weight in the first weeks of application in micro injection solution [24].

It has been shown that *Cynara scolymus* action as a choleric (substance that increases the production of bile)[21], it was observed that bile production is increased after 30 minutes of intraduodenal administration 1.92 gr of standardized extract. *Cynara scolymus* leaves have had a hypocholesterolemic and hipotrigliceremiantes effect by the action of the luteolin[25].

A randomized, double-blinded, in 140 patients who had elevated cholesterol levels, which were reduced about 20% of the cholesterol values [26], clinical study. Cholesterol decreased causing ingestion of the extract of artichoke leaf attributed to sesquiterpene lactones (cinaropicrina , grosheimina) and flavonoids (luteolin , luteolin glycosides) [27].

Regarding the problem of obesity, an investigation mentions that serious scientific evidence has not been found in regard with the artichoke for weight loss and most products mentioned that exist are combinations with other substances like cherry juice, black radish, green tea, Fucus extract, *Garciniacambogia*, among others [28], not to mention clearly the effect on weight loss. An investigation was performed looking to see if *Cynara scolymus* is useful for solving hangover caused by alcohol but it has not been found that the plant extract has a significant effect [29].

In another study it was found that *Cynara Scolymus* extract improves symptoms in patients with dyspepsia, this study was a multicenter trial,

double-blind, placebo-control group test, in which it was mentioned that it is important to conduct further studies to determine what could be the mechanism of action of *Cynara scolymus*[30].

CONCLUSIONS

1. BMI in overweight and obesity people in this study did not change significantly.
2. The potency with greater decrease in BMI in this study was 1 CH potency, but it was not significant.
3. Of all the people who completed the study in the third consultation regarding the mean of the BMI in comparison with the BMI of the first consultation, resulted in having a decrease and significance but not in comparison with the placebo.
4. Further studies are suggested with captive groups in health institutions where the patient's responsibility becomes more formal.
5. The alimentation in Mexico in a specific season, as in December, Easter, or summer holidays, results in difficulties to control the treatment due to habits and culture that the patients have.

6. The symptoms that were reflected as part of the use of *Cynara scolymus* can be extended with a new study that contemplates a great quantity of people.

Suggestions and recommendations.

It is suggested to conduct studies that observe the corporal comparison with bioimpedance during the administration of *Cynara scolymus*. It is suggested to conduct a new study to determine the complete pathogenesis of *Cynara scolymus*.

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REFERENCES

1. WHO, World Health Organization. (2011) Obesidad y sobrepeso. Nota descriptiva 311: Marzo de 2011.
2. Ascaso JF, González-Santos P, Hernández A, Mangas A, Mansana L, Millán J, et al. Diagnóstico de síndrome metabólico. Adecuación de los criterios diagnósticos en nuestro medio. Recomendaciones del foro HDL. *Rev Clin Esp.* **206**(11):576-82 (2006).
3. Popkin BM. The shift in stages of the nutritional transition in the developing world differs from past experiences. *PublicHealthNutrition*, **5**: 205-214 (2002).
4. Secretaría de Salud. Encuesta nacional de Salud 1999. Estado de nutrición de niños y mujeres en México. SSA. INSP. INEGI, Disponible: <http://www.insp.mx/ensanut/centroocci/Jalisco.pdf>
5. WHO, Organización Mundial de la Salud Informe sobre la salud en el mundo 2002. Reducir los riesgos y promover una vida sana. Ginebra, Organización Mundial de la Salud, Disponible http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_spanish_web.pdf.
6. Olaiz Fernández, G, Rivera-Domarco J, Shamah-Levy T, Rojas R, Villalpando-Hernández S, Hernández-Avila M, Sepúlveda Amor J. *Encuesta Nacional de Salud y Nutrición 2006*. Cuernavaca, México: INSP.
7. WHO, Organización Mundial de la salud. Organización Panamericana de la Salud. Estrategia. 2005-2009 de cooperación con el país México. Recuperado 11 Enero 2011 Disponible en: http://www.who.int/countryfocus/cooperation_strategy/ccs_mex_es.pdf
8. Redeparede Clasificados. México: Alcachofa reforzada con L-carnitina y cromo baja de peso más rápido. 2012 Recuperado 29 de Febrero 2012. Disponible: <http://>

- reparede.com.mx/monterrey/en-venta/productos/posts/alcachofa-reforzada-con-l-carnitina-y-cromo-baja-de-peso-mas-rapido-329414.
9. Hahnemann S.C.F. *Organon de la Medicina*. 6ª ed. México: ed. Porrua, 1989.
 10. Hahnemann S.C.F Traducido por François Flores D. *Escritos Médicos Menores*. 2ª ed. India: Ed. B. Jain Publishers. 2001.
 11. *Historia de la Homeopatía*. (2010). Homeopatía. Recuperado: Marzo 1, 2010: Disponible en: <http://www.homeopatia.com.mx>
 12. Larnaudie R. *La vida sobre humana de Samuel Hahnemann*. México: ed. Fernando Aldape Barrera. 1975.
 13. De Malach JG, Sachs M, and Rotem R. Timing and Optimal Concentration of Gibberellic Acid Treatments for Forcing Yield of Globe Artichoke (*Cynara scolymus* L.) *Edizioni Minerva Médica, Turin, Italy*, . 633-642 (1976).
 14. Bray GA. Obesity: historical development of scientific and cultural ideas. *Int J Obes*, **14**: 909-26 (1990).
 15. Papavramidou NS, Papavramidis ST, Christopoulou-Aletra H. Galenon obesity: etiology, effects, and treatment. *World J Surg*. **28**: 631-5 (2004).
 16. Stunkard AJ, La Fleur WR, Wadden TA. Stigmatization of obesity in medieval times: Asia and Europe. *Int J Obes Rel Metab Disord*. **22**: 1141-4 (1998).
 17. Gerakis PA, Markarian A, Honma S. Vernalization of Globe Artichoke, *Cynara scolymus*. *J. Amer. Soc. Hort. Sci*. **94**. 254-258 (1969).
 18. Fonnegra R. *Plantas medicinales aprobadas en Colombia*. 2ª ed. Colombia. *Universidad de Antioquia*. 1990.
 19. Orlovskaya TV, Luneva IL, Chelombit'ko VA. Chemical composition of *Cynara scolymus* leaves. *Chem Nat Comp*. **43**(2):239-240 (2007).
 20. Orlovskaya T V, Chelombit'ko V A, Khim. Prir. Soedin. 194 (2007).
 21. Zhu XF, Zhang HX. Flavonoids of *Cynara scolymus*. *Chem Nat Comp*. **40**(6):600-601 (2004).
 22. Speroni E, Cervellati R, et al. Efficacy of different *Cynara scolymus* preparations on liver complaints. *J Ethopharmacol*, **86**(2-3):203-11 (2003).
 23. Shimoda H, Ninomiya K, Nishida N, et al. Anti-hyperlipidemic sesquiterpenes and new sesquiterpene glycosides from the leaves of artichoke (*Cynara scolymus* L.): structure requirement and mode of action. *Bioorg Med Chem Lett*. **13**(2):223-8 (2003).
 24. Bedoña CJ, Martínez H, Rojas M. Aplicación Intradérmica de *Cynara scolymus* para tratamiento de obesidad localizada [Tesis Especialidad]. Iztapalapa México: *Universidad Autónoma Metropolitana*. 2004.
 25. Thompson Coon JS, Ernst E. Herbs for serum cholesterol reduction: a systematic view. *J Farm Pract.*; **52**(6):468-78 (2003).
 26. Englisch W, Beckers C, Unkauf M, Ruepp M, Zinserling V. Efficacy of artichoke dry extract in patients with hyperlipoproteinemia. *Arzneimittelforschung*, **50**(3):260-5 (2000).
 27. Brown JE, Rice-Evans CA. Luteolin rich artichoke extract protects low density lipoprotein from oxidation in vitro. *Free Radic Res*, **29**(3): 247-55 (1998).
 28. De Villar N, Loria V, Monereo S. Tratamientos Alternativos de la Obesidad: Mito y realidad. *Med Clin Barc*, **121**(13):500-10 (2003).
 29. Pittler M, White A, Stevinson C, Ernst E. Effectiveness of artichoke extract in preventing alcohol-induced hangovers: a randomized controlled trial. *Can Med Asoc J*, **169**(12):1269-1273 (2003).
 30. Holtmann G, Adam B, Hang S, Collet W, Grunewald E, Windeck T. Efficacy of artichoke leaf extract in the treatment of patients with functional dyspepsia: a six-week placebo-controlled, double blind, multicentre trial. *Aliment Pharmacol Ther*, **18**(11-12):1099-105 (2003).