A Reserch on Weight Loss by Using Nanoemulsion

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***Abstract*—Our nano emulsion is a great tool for solving these issues. It is composed entirely of natural herbs, such as tulsi oil, lemon grass oil, conjugated linoleic acid, and ascorbic acid, which have both antioxidant and metabolic qualities. These can promote a healthy metabolism and prevent the body from storing excess fat. Additionally, we included hydroxycitric acid, the active pharmaceutical component of the nano emulsion. By attacking citrate, hydroxycitric acid prevents the synthesis of fatty acids.**

Numerous illnesses, such as heart disease and type 2 diabetes, are made more likely by obesity. Numerous underlying metabolic disorders that impact the liver, pancreas, muscle, fat, and other tissues are the cause of these health problems. Excess body fat and occasionally poor health are the results of obesity, a chronic, complicated disease with multiple causes. Naturally, body fat is not a disease in and of itself. However, excessive body fat can alter how your body works. These alterations can have a negative impact on one's health, are progressive, and may get worse over time.You can clearly distinguish, for instance, between carrying too much weight and putting too much strain on your joints and skeleton. More subtle consequences include blood chemical alterations that raise your risk of diabetes, heart disease, and stroke.Oil-in-water (O/W) and water-in-oil (W/O) dispersions of two immiscible liquids stabilized with a suitable surfactant are known as nano emulsions. To address the main shortcomings of traditional drug delivery systems, a sophisticated mode of delivery has been created.

***Index Terms*—Tulsi oil, nanoemulsion, Oil-in-water, obesity, diabetes.**

1.INTRODUCTION

For a long time, herbal treatment or folklore medicines were widely used for the treatment of many diseases in many countries (both developed or developing). With the passage of time, with advancement in the field of medicines, synthetic s medicines gradually started replacing natural medicines irrespective of the fact that formerhave some side effects as well. There is an increasing demand of herbal medication due to side effects of synthetic medicines on body. so, we have prepared an herbal medication to promote weight loss in obese.

Obesity is a risk factor for many diseases, including type 2 diabetes and heart disease. These health issues stem from a range of underlying metabolic abnormalities that affect the liver, pancreas, muscle, fat, and other tissues. Obesity is a complex, chronic disease with several causes that lead to excessive body fat and sometimes, poor health. Body fat itself is not a disease, of course. But when your body has too much extra fat, it can change the way it functions. These changes are progressive, can worsen over time, and they can lead to adverse health effects.

The good news is that you can improve your health risks by losing some of your excess body fat.

Even small changes in weight can have a big impact on your health. Not every weight loss method works for everyone. Most people have tried to lose weight more than once. And keeping the weight off is just as important as losing it in the first place. Obesity affects your body in many ways. Some are simply the mechanical effects of having more bodyfat. For example, you can draw a clear line between extra weight on your body and extra pressure on your skeleton and joints. Other effects are more subtle, such as chemical changes in your blood that increase your risk for diabetes, heart disease and stroke.

To overcome these problems our Nanoemulsion is very useful. It is made up of all natural herbs like tulsi oil, lemon grass oil, conjugated linoleic acid, ascorbic acid which has the antioxidant as well as metabolism propertiescan lead to proper metabolism and excess fat cannot be store in

body. We also added another ingredient i.e. hydroxycitric acid which is active pharmaceutical ingredient of nanoemulsion. Hydroxycitric acid inhibits the synthesis of fatty acids by attacking on citrate.

Fig no.1: - Obesity

NANOEMULSION: -

Nanoemulsions are oil-in-water (O/W), water-in-oil (W/O) dispersion of two immiscible liquids stabilized using an appropriate surfactant [1]. An advanced mode of drug delivery system has been developed to overcome the major drawbacks associated with conventional drug delivery systems. This review gives a detailed idea about a nanoemulsion system. Nanoemulsions are nano-sized emulsions, which are manufactured for improving the delivery of active pharmaceutical ingredients. These are the thermodynamically stable isotropic system in which two immiscible liquids are mixed to form a single phase by means of an emulsifying agent, i.e., surfactant and co- surfactant. The droplet size of nanoemulsion falls typically in the range 20–200 nm. The main difference between emulsion and nanoemulsion lies in the size and shape of particles dispersed in the continuous phase. In this review, the attention is focused to give a basic idea about its formulation, method of preparation, characterization techniques, evaluation parameters, and various applications of nanoemulsion. The mean droplet diameter attained is usually

< 500 nm. Small droplet size gives them a clear or hazy appearance which differs from milky white color associated with coarse emulsion (whose micron sized droplets partake in multiple light scattering) . The word nanoemulsion is sometimes used interchangeably with submicron emulsion or mini emulsion; however, it should not be confused with microemulsion. Nanoemulsions despite having the same droplet size range as microemulsions, differ tremendously in structural aspects and long- t e r m thermodynamic stability.

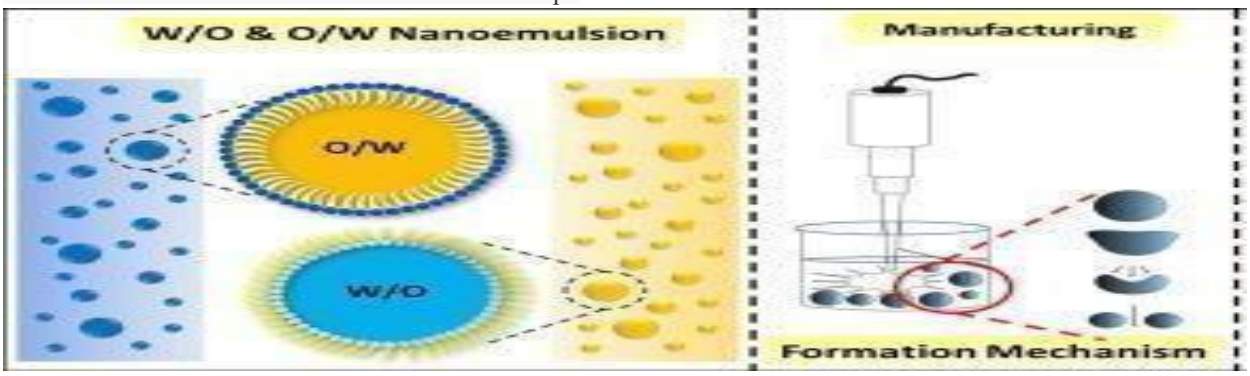

Fig no. 2:- Nanoemulsion

2. MECHHANISM OF ACTION OF CLA

Fat Metabolism: By affecting the metabolism of adipocytes, or fat cells, CLA can lower body fat mass. This comprises Decreased lipogenesis refers to a decrease in the production of new fat cells and a decrease in fat storage. Enhancing the breakdown of stored fat for energy is known as increased lipolysis.
Modulating PPARγ: Peroxisome proliferator-activated receptor gamma (PPARγ) is a nuclear receptor that controls the expression of genes linked to fat metabolism and storage. CLA can interact with this receptor. CLA can affect the expression of genes related to adipocyte differentiation and fat storage by affecting PPARγ, which will ultimately result in less body fat.

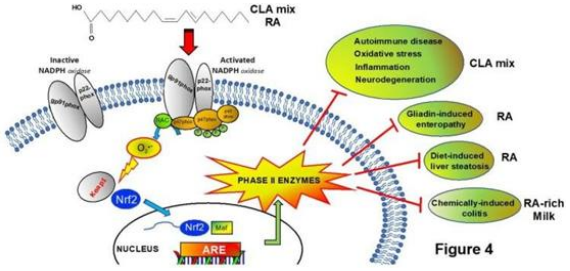

Fig no 3. MECHHANISM OF ACTION OF Cla

3. AIM & OBJECTIVES: -

- To Check the effect of herbal drugs extract on obese patients.
- To make a combination of drugs.
- To get better knowledge about herbs & herbal oil.
- Use of herbal drugs in day-to-day life.
- Make world know about difference between herbal drugs & synthetic drugs.
- To encourage people to loose weight in healthy way.
- To prepare a formulation for day to day use for prevention & treatment of obesity.
- Introducing herbal medicine & ayurvedic treatment to the community.
- Providing safer alternative to synthetic drugs.

4. MATERIAL

Sr.No	Ingredients	Manufacturing
1	Conjugated linoleic acid	Chemcopia,Gujrat.India
2	Pomegranate oil	Sohuum Aroma Pvt Ltd.Pune
3	caffeine	Dortmund Laboratories Pvt Ltd,Thane
4	Tulsa oil	Sohuum Aroma Pvt Ltd.Pune
5	Lemongrass oil	Sohuum Aroma Pvt Ltd.Pune
6	Ascorbic acid	Dortmund Laboratories Pvt Ltd,Thane
7	Tween 80	Dortmund Laboratories Pvt Ltd,Thane
8	Benzalkonium chloride	Dortmund Laboratories Pvt Ltd,Thane
9	Distilled water	Sohuum Aroma Pvt Ltd.Pune

Table no -1 Material Manufacturing

5. METHODOLOGY/PROCEDURE

The nanoemulsion can be prepared by both high energy and low energy methods. High energy method includeshigh-pressure homogenization, microfluidization, and ultrasonication whereas low energy methods include the phase inversion emulsification method and the self-nanoemulsification method.
Extraction of lemon grass oil and holy basil oil:
A. Fresh leaves of krishnatulasi and lemon grass

were collected.

B. Wash it with distilled water to remove dust and impurities.
C. Cut the washed leaves of lemon grass and krishnatulsi to obtain more oil.
D. Put this chopped leaves in a round bottom flask which contains distilled water at level were leavesare just immersed in it.
E. Then set up assembly of clavenger‟s apparatus.
F. Maintain temperature up to 70^0- 80^0 c.
G. Oils (citral , eugenol) are collected after 8-10 hours after boiling.

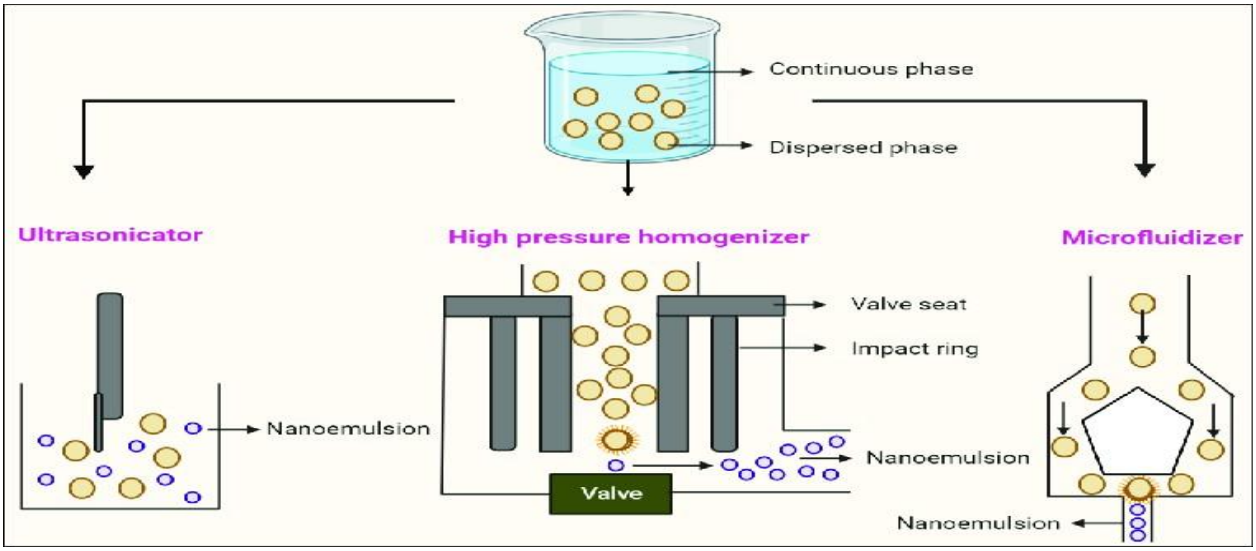

Fig no 4. Various method of preparation of Nano-emulsion

6. EXPERIMENTAL WORK

Formulation of Nanoemulsion :

High-pressure homogenization:

High energy methods are extensively used to formulate nanoemulsio Highmechanical energy is used that provide strong disruptive forces, which break up large droplets to nano-sized droplets and produce nanoemulsions with high kinetic energy High-pressure homogenizers supply high energy and give homogeneous flow to generate smallest particle sizes. Therefore, high-pressure homogenizers are most widely used to prepare nanoemulsions. High-pressure homogenizers are used to create intensely disruptive forces that form nanoemulsions of extremely low particle size (up to 1 nm) The coarse emulsion is then passed through a small orifice with high pressure (500 to 5,000 psi) Several forces, such as intense turbulence, hydraulic shear, and cavitation, are appliedtogether during this process, to give nanoemulsions with very small droplet sizes.

7. FORMULATION TABLE

Sr.No	Ingredients	Properties	Quantity (30ml)
1	Conjugated linoleic acid	API	13.5gm
2	Pomegranate oil	Oil phase	13.5
3	caffeine	CNS stimulant	2.4gm
4	Tulsa oil	Immunizing agent	1ml
5	Lemongrass oil	Antioxidant	1ml
6	Ascorbic acid	Antioxidant	0.45gm
7	Tween 80	surfaactant	0.01gm
8	Benzalkonium chloride	preservative	0.001gm
9	water	Disppersion medium	4.5ml

Table no -2 Formulation of Ingredients

8. STEPS FOR PREPARATION OF NANOEMULSION:

1. Preparation of water phase:

Caffeine, ascorbic acid, tween 80, benzalkonium chloride are added in water and heated on burner till thepowder get dissolved in water.

2. Preparation of oil phase or continous phase:

Holy basil oil, lemon grass oil and hydroxyl citric acid is aadded into pomegranate oil.

a. Water phase slowly added to oil phase i.e. continous phase by continuously stirring on magnetic stirrer.

b. After that this preparation is homogeinize at 75000rpm for 1 hour into homogeinizer.

c. Nanoemulsion is prepared.

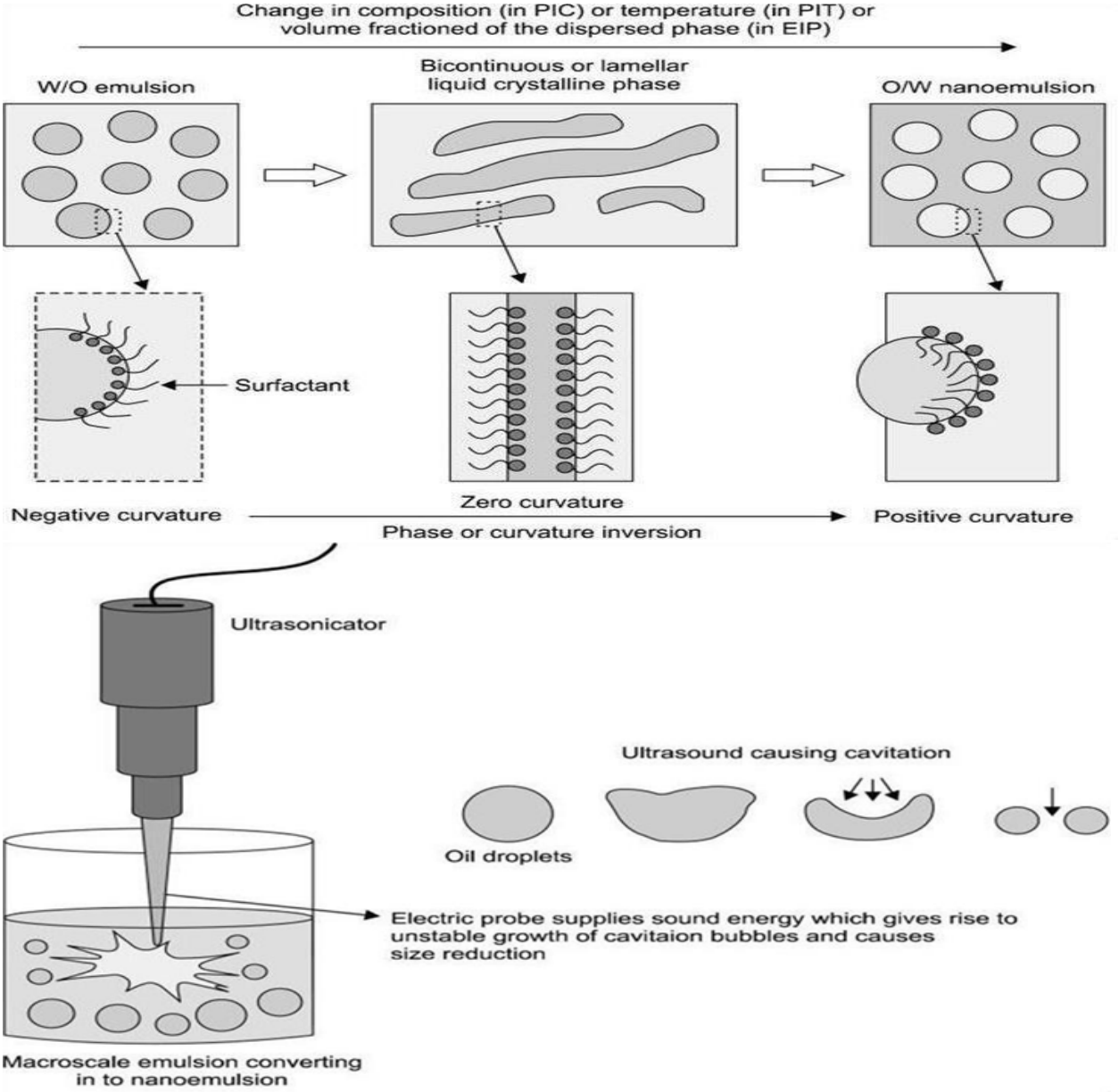

Fig No. 5: - FORMATION OF NANOPARTICLES

9. RESULT & DISCUSSION

Herbal medicine is both promotive and preventive in its approach. An effective way of combating these diseases might be by targeting their predisposing factors. Herbal extracts have been of particular interest these days owing to various side effects associated with conventional modes of

treatment. Over the years, the study on medicinal plants to reveal the mechanism of action and to justify their claims by traditional healers has been increased.

From above study we can conclude that if preclinical studies are performed then it will definitely reduce weight.After that we can go for clinical studies.

10. CONCLUSION

Nanoemulsion offers a promising future in healthy body care, providing a natural alternative to conventional drugs. The use of herbal ingredients, such as hydroxycitric acid, lemon grass oil, tulsi oil, pomegranate, cancontribute to improve health.

However, further research and clinical trials are needed to validate the efficacy and Safety of herbal nanoemulsion for widespread use.

There has been a change in global awareness, with a growing tendency to „go natural „and due to the side effects of oily foods and consumption of fat which causes obesity so to avoid it Herbal products have been gaining much importance. Thus, we had made an attempt to outline commonly available herbal leaves oil which can be used effectively as antiobesity therapeutic agents. With further research in this field, we would get much safer.

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