



Formulation and Evaluation of Herbal Chocolate in the treatment of hormonal imbalance

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Abstract

The objective of this study is to design and fabricate chocolate. It is also called as chocolate drug delivery. The essential target of this study was to formulate and evaluate natural nutritious chocolate and nutritional supplement containing women hormonal imbalance that will have the additional work in infertility, ovulation, menopause, and pcos. Present study was to make to get ready chocolate plan of Vitex agnus-castus, cinnamon and holy basil which enhance the ovulation, hormonal function and also used in stress and insulin management. Chocolate is a range of products derived from cocoa (cacao), mixed with fat and finely powdered coconut sugar to produce a solid confectionery The medicated chocolate formulation is widely used for hormonal imbalance and increases patient compliance. The prepared chocolate formulations were evaluated for general appearance, Ph and stability and blooming tests and also shows good drug release properties.

Keywords: Herbal Chocolate, Vitex, Occimum Sanctum, Cinnamon, Hormonal Disorder

Introduction

Ovulation is when a woman's ovary releases an egg (oocyte) typically every 28 days. If a woman's ovaries do not produce an egg or something else interrupts this process, she will have problems becoming pregnant. This is called infertility. If the women have irregular periods, you may have a condition called polycystic ovarian syndrome (PCOS). PCOS is when a hormonal imbalance causes your ovaries to enlarge and develop small cysts on the outer edges. Ovulation disorders are one of the leading causes of female infertility, and occur when ovulation is disrupted or absent. They present as irregular or absent periods and can be confirmed with a blood test. Hormonal imbalance three main factor affecting in the body

stress,hormonal, and sugar metabolism. Three main drug for use in chocolate formulation Ovulation disorders and infertility. Ovulation disorders are a common cause of infertility in women. Allopathic medicine may causes various disorder

Herbal formulations means a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetic benefits meant for use to diagnose, treat, mitigate.¹⁻⁵

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Herbal formulations contain an active substance or herbal substance or herbal preparation or herbal substance in combination with one or more herbal preparations. This Cocoa and chocolate products have been used as medicine in many cultures for centuries for their health benefits. Many of these benefits are from flavonoids, which act as antioxidants, help lower blood pressure, and balance certain hormones in the body Dark chocolate contains a large number of antioxidants, far more than milk or white chocolate, which do not confer the same health benefits.

Chocolate is a preparation of roasted and ground cacao seeds that is made in the form of a liquid, paste, or in a block, which may also be used as a flavoring ingredient in other foods. There are three main types of chocolate: white chocolate, milk chocolate, and dark chocolate. stly made of cocoa butter, it is useful in cardiovascular disease, cognition, stress, mood, Chocolate's energy-boosting power

The *Vitex agnus-castus* fruit, also known as chasteberry or monk's pepper, is about the size of a peppercorn. It's produced by the chaste tree, which acquired its name because its fruit was likely used to decrease men's libido during the Middle Ages *Vitex agnus-castus* is a popular herbal supplement used to treat a variety of health problems. It's most commonly used to treat,premenstrual syndrome (PMS),menstrual disorders infertility ,acne,menopause Her.ther conditions affecting a woman's reproductive system

Ocimum sanctum most popularly known as Tulsi has been used for thousands of years in Ayurveda for its diverse Healing Power, Kidney Stone, Basil has strengthening effect on the kidney.Stress: Basil leaves are regarded as anti-stress agents. Recent studies have shown that the leaves afford significant protection against stress it is also useful in headache , diabetes, stress. The herb contains detoxifying properties and antioxidants which rejuvenate the skin. It aids in removing toxins responsible for causing pimples, thus helping in the treatment of acne and leading to a reduction in the occurrence of breakouts. The herb leaves are effective in the treatment of oral infections. It is found to offer preventive properties to patients with periodontal disease as well.

Cinnamon is a potent spice. It has been used for thousands of years not just for its aroma, but for its powerful medicinal properties as well. The most important properties of cinnamon are those of its antioxidants and type 2 diabetes. It can help manage this condition by reducing blood pressure and improving insulin sensitivity. Certain compounds in cinnamon can imitate the effects of insulin and help regulate blood sugar, a function which is crucial for those with diabetes, Reduce cholesterol, Reduce inflammation low signs of aging hence We formulated the herbal chocolate nutritional supplement with three main herbs vitex used for hormonal imbalance, cinnamon used for sugar metabolism and tulsi used for stress and proper ovulation.⁶⁻¹⁰

Material and Methods

Vitex, Cinnamon, and *Ocimum Sactum* extract received gift sample from Amstar pharmaceuticals, Indore. Coconut sugar, cocoa butter, dark chocolate & ethanol purchase from local market.

Method:

Preparation of Chocolate formulation¹¹⁻¹⁵

- All the ingredients were weight accurately.
- In one beaker, cocoa powder and coconut sugar was taken and mixed properly.
- In another beaker, dark chocolate cocoa butter has melted and this melted buyer was added in a powder mixture and mixed properly to get fine consistency.
- After that soya lecithin as an emulsifier was added and mixed.
- Finally the herbal drug extract was measured accurately and added in above prepared chocolate
- Then strawberry as a flavoring agent was added before going to set in moulds.
- Then the prepared chocolate containing herbal drug extract was poured in moulds and kept in freeze to set overnight.
- Total 7 formulations were prepared by varying the concentration of herbal drug extract used, while the concentration of excipients was kept constant.
- decorate with white milk powder

Table 1: compositions formulations

Content	F1	F2	F3	F4	F5	F6	F7
Vitex extract	20 mg	15 mg	30 mg	40 mg	15 mg	20 mg	40 mg
Ocimum Sactum	300 mg	200 mg	400 mg	200 mg	100 mg	300 mg	400 mg
Cinnamon	500 mg	1000 mg	500 mg	2000 mg	100 mg	400 mg	300 mg
Coconut sugar	4 gm	5 gm	4 gm	4 gm	5 gm	4 gm	5 gm
Dark chocolate	10 gm	10 gm	8 gm	10 gm	10 gm	10 gm	8 gm
Soya lecithin	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm	0.05 gm
Cocoa Butter	3 gm	2.8 gm	4 gm	3 gm	3 gm	2.8 gm	3 gm
Strawberry flavour	0.005 ml	0.005 ml	0.005 ml	0.005 ml	0.005 ml	0.005 ml	0.005 ml

Evaluation of herbal chocolate¹⁶⁻¹⁷

Organoleptic properties: These are Sensory properties. Those that can be detected by the sense

organs. For foods, it is used particularly of the combination of taste, texture, and astringency and aroma (perceived in the nose).

Table 2: Organoleptic evaluation parameter

Parameter	F1	F2	F3	F4	F5	F6	F7
Colour	brown	Dark brown	brown	Light brown	brown	brown	brown
Odour	Chocolaty fruity	Chocolaty fruity	Chocolaty fruity	Chocolaty fruity	Chocolaty	Chocolaty fruity	Chocolaty fruity
Taste	Slightly sweet	Slightly sweet, acrid	Slightly sweet, bitter	Slightly sweet, acrid	Slightly sweet	Slightly sweet	Slightly sweet
Mouth feel	Smooth & Pleasant	Smooth & Pleasant	Smooth & Pleasant	Smooth & Pleasant	Smooth & Pleasant	Smooth & Pleasant	Smooth & Pleasant
Appearance	glossy	dull	dull	glossy	dull	glossy	glossy

pH of chocolate formulation

Table: 2

Formulation code	F1	F2	F3	F4	F5	F6	F7
PH	6.8	7.2	6.5	6.9	7.1	6.5	6.5

Blooming test

Bloom is a test to measure the strength of a chocolate. The test determines the weight in grams needed by a specified plunger to depress the surface of chocolate without breaking it at a

specified temperature. There is no blooming was observed in any formulation.

Stability Studies

The formulation and preparation of any product is incomplete without proper stability studies of the prepared product. A general method for predicting the stability of any product is accelerated stability studies, where the product is subjected to elevated temperatures as per the ICH guidelines. A short term accelerated stability study was carried out for the period of 3 months for the prepared formulation.

Table 3: Stability parameter

Parameter	Storage condition	Storage condition	At the time of preparation	After the one month	After
Colour odour, taste, mouth feel, appearance	30 °C	2-8 °C	Brown, chocolaty, slightly bitter, smooth, glossy	No change	No change

Result and Discussion

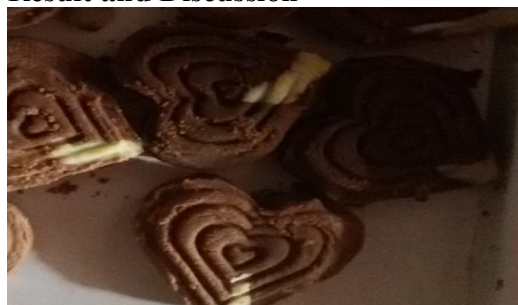


Fig. 1: Herbal chocolate

The various batches were prepared F1 to F7 and F7 is the best formulation according to colour odor test and organoleptic properties this study was carried out to determine the physicochemical properties of chocolate based on colour, hardness, glossiness and fat bloom. The sensory evaluation of the chocolate was analysed at immediately after processing and at three months' storage. F 7 formulations chocolate were formulated.

Conclusion

From the above result, it can be concluded that the F3 batch as an optimized batch, provides sweetening property as compare to others, pH& stability profile to be satisfactory. Wide scope is available for further in vivo study by using cognition model or any suitable animal model. Herbal extracts of vitex, cinnamon and tulsi were successfully formulated in the chocolate formulations and contain the active constituents i.e. β -caryophyllene, sabinene, and cinnamaldehyde, used for hormonal imbalance and sugar metabolism and also improve stress condition. The Organoleptic properties of chocolate are excellent for masking unpleasant flavors associated with some active agents and imparting a smooth and creamy texture

to compositions of active agents. Thus chocolate formulation provides a palatable means for delivering medicaments through oral delivery. The drugs extracts, which are used in the dose range are safe consumption and can be swallowed without any risk of side effects.

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