



FORMULATION AND EVALUATION OF STRESS-RELIEVING HERBAL JELLY CONTAINING TULSI OIL, CURCUMIN OIL AND LEMON OIL

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ABSTRACT In recent research edible jelly was prepared containing lemon oil, curcumin oil and tulsi oil. Some people have difficulty in swallowing drugs so patient compliance and self-administration of drugs had improved by preparing this edible jelly. Formulation of edible jelly were prepared by using agar of 0.25, 0.35, 0.50, 0.75 and 1 percent concentration. pH, viscosity, drug-drug interaction, drug stability and physical appearance of edible jelly at different concentration were evaluated. Herbal jelly gain greater attention because of medicinal properties of drug have low adverse effect, biocompatible and economically less costly.

KEYWORDS : Extract, edible jelly, herbal, stress, oil, formulation

Stress: It is a normal process that occurs in the human body. The human is designed to tolerate stress and react according to stress conditions. When any change or challenge comes in front of a human, your human body generates a physical and mental response, that is stress. New situations are adjusted through stress response to help the body of humans. It can be positive, providing signaling of alerts. Stress may be provided motivation and help to handle or avoid dangerous situations in front of the human body.

The autonomic nervous system of the human body controls breathing, heart rate, change in vision, and furthermore. When the body faces stressful situations, the body generates a fight or flight response. When stress continues to develop, physical, emotional and behavioral responses are generated by the human body. Physical symptoms of stress are headache, hypertension, muscle pain, weakening of immune symptoms, and gastrointestinal problems. Emotional and mental symptoms of stress are anxiety, irritability, depression, panic attack and sadness.[1]

Curcumin: It is a yellow or orange colored powder obtained from plants. Curcumin belongs to the family Zingiberaceae. It is used as herbal supplements, cosmetic ingredients, food flavoring and food coloring agents. Phenolic pigment in curcumin is responsible for the yellow color. It has anti-inflammatory, anticancer and antioxidant properties.[2]

Tulsi oil:

It is a perennial plant belonging to the Ocimum genus belonging to the family Lamiaceae. Holy basil or Ocimum sanctum is primarily used in the treatment of respiratory and skin diseases. Tulsi is used as an immunity booster, insect repellent, nematocidal, and disinfection. Aromatic oil of tulsi is obtained by extraction.[3]

Lemon oil:

Citrus Limon is a small evergreen tree belonging to the family Rutaceae. Lemon provides flavor in drinks, desserts, baked food and salad. It is a rich source of vitamin C and flavonoids. It is useful in the treatment of scurvy, life-threatening conditions. It is used in lowering stroke risk, hypertension, preventing asthma, maintaining a healthy complexion, cancer prevention, weight loss and improving iron absorption.[4]

Material and methods:

Collection and identification of plants:

Fresh leaves of tulsi are collected from plants of Ocimum sanctum

growing in the surrounding area. Dry roots of turmeric (curcumin longa) and fresh lemon (citrus Limon) are collected from the market

Chemicals:

Tulsi oil, lemon oil, curcumin oil, agar, gelatin, citric acid, propylene glycol, sugar syrup, methylparaben, propylparaben, flavoring agent, honey and water were collected and used in the investigation.

Extraction:

Tulsi:

By using a Clevenger apparatus, hydro-distillation methods were used to collect essential oil of tulsi. 200 gm of dried leaves of tulsi were placed in 0.5 L round bottom flasks. Distilled water is filled up to the two-thirds mark of the flask. The water of the flask was heated by using heating metal. Clevenger and condenser were fitted by the flask. Oil of tulsi is collected in the collection area, remaining floated into the oil. Oil of tulsi was not visible in the condenser area after 4-5 hours. Oil of tulsi is collected after removing the bottom water layer. To absorb all remaining moisture content in oil NaOCl was utilized.

Curcumin oil:

Extraction of curcumin oil was done by the Soxhlet apparatus. 100 ml of ethanol is used for washing of Soxhlet assembly. 10 gm of curcumin placed in Soxhlet funnel and 150 ml ethanol placed in 500 ml round bottom flask was used for extraction for 7-8 hours. Essential oil is collected in a round bottom flask.

Lemon oil:

Extraction of lemon oil was done in steam distillation assembly. A cheese grater is used to get a lemon peel. 78.14 gm lemon peel is placed in 500 ml of a flat bottom flask. The flat bottom flask was connected with a steam distillation assembly. The flat bottom flask was heated with a magnetic stirrer for one hour more. Essential oil with water is extracted in the receiver flask. It is water-insoluble oil. Now liquid-liquid extraction was done in separating the funnel. The extract was poured in separating the funnel and adding 10 ml hexane. The nitrogen is released the pressure that might form in the funnel constantly. After that, it stood for a few seconds. Oil and water layer separation occurred in the funnel and essential oil was collected.

Essential oil is heated in a magnetic stirrer to evaporate hexane from the oil.

Preparation of jelly:

At different concentrations, jelly was prepared. Jelly was prepared by using gelatin and agar which act as a gelling agent at different

concentrations in five formulations. The gelling agent was made at different concentrations to achieve desired appearance, stiffness and release. pH is maintained by using citric acid. Softness and slippery effects were done by incorporating propylene glycol. The aesthetic value of jelly was enhanced by adding organoleptic agents. Sodium benzoate as a preservative was added. Sugar and honey were added as sweetening agents and bulking agents.

Agar gelatin propylene glycol citric acid was taken in a beaker and was heated at a magnetic stirrer continuously to get a solution. In another beaker, sugar solution was made and poured into a previous beaker at 80°C, and tulsii, curcumin and lemon oil were added. After that sweetening and flavoring agents were added and mixed continuously at 60°C. After that, this matter is transferred into mold and protected it from the outer environment. After that jelly was prepared and wrapped in wax paper and stored in dry places.

Characterization of jelly:

1. Physical observation: clarity, odor, texture, and presence of a gritty particle in prepared jelly were evaluated visually. By slowly rubbing jelly between two-finger, the grittiness and sticky nature of jelly were evaluated.

2. pH: pH affects the taste and stability of the formulation. The pH of the prep ared jelly was measured by a digital pH meter at room temperature. Take 0.5 gm of jelly and dispersed in 50 ml of distilling water (1% solution), then pH Noted.[5]

3. Syneresis: generally gel show syneresis and de-gelling due to the release of liquid when gel shrink. During storage, condition gel was shrunk and separation of water occurred from the formulation. All the jellies were placed at room temperature for a few days and observed the syneresis effect.[6]

4. Viscosity: Brook field viscometer using spindle DV-E-64 measured the viscosity of jelly. Jelly was placed in a viscometer for 2 min at the rotation of 1.5 rpm at room temperature and viscosity was measured.[7]

5. Drug-excipients compatibility studies: In a 1:1 ratio drug and excipients were mixed and transfer into borosilicate colored glass vials. All the vials were sealed and placed into an oven that had 40°C temperature and 75% relative humidity. After 15, 30 and 45 days samples were evaluated visually for any alteration in color and formation of a lump.

6. Stability study: viscosity, color, taste and odour of jelly must be retained throughout its shelf life. Over a six-month jelly was evaluated at two temperatures at 35°C and 45°C. A sufficient number of jelly (10 samples) were placed in amber color bottle screw-capped bottle and transferred into an incubator at 35°C. Samples were withdrawn for evaluation after 3 months and estimated drug content. pH, sugar crystallization, stiffness and viscosity were evaluated.[8]

7. In vitro drug release: USP Type-2 dissolution apparatus (paddle) was used to evaluate in-vitro drug release. Take 100ml of pH 6.8 buffer and transfer it into a 1000ml dissolution flask. After that jellies were replaced. And set the 150 rpm and 35°C temperature in the dissolution apparatus. After 1, 2, 3, 4, 5 and 6 min 5 ml sample was withdrawn. Each volume of dissolution medium was added to the dissolution flask after each withdrawal the sample. The filtered sample was diluted and analyzed at 272 nm by utilizing UV-visible spectrophotometry.

8. Anti-stress relieving properties: curcumin is a polyphenolic compound due to which it removes harmful agent released during stress and also activates the formation of new brain cells and their connections. Lemon oil closely related with 5-HT pathway. Metabolism of dopamine in hippocampus and of 5-HT in prefrontal cortex and striatum is activated by lemon oil. So, lemon oil show anti-stress relieving property by enhancing serotonin hormone. Tulsii extract protect from the harmful chemical causing stress in body. It also protect from the pollutants and other environmental chemical exposure that cause stress and cancer.

Result and discussion:

Physical observation: observed physical observation showed in table 2.

Discussion: We had identified that all formulation have smooth texture and in appearance three formulation are yellowish and one is translucent. all formulation did not have bubble in it. F5 formulation

was slightly hard. F3, F4 and F5 formulation did not show stickiness and grittiness. F2, F3, F4 and F5 formulation did not show sugar crystal in it means sugar is dissolved properly. F3, F4 and F5 formulation showed acceptable jelly formulation.

pH: pH of the formulation was calculated shown in table 3.

Discussion: pH of formulation affects the taste of jelly and found in the range of 3.03±0.15 to 4.04±0.12.

Syneresis: syneresis is observed in table 3.

Viscosity: flowing property of formulation was calculated and shown in table.

Stability study: Physical stability of drug was checked of all formulation. At cold temperature F1 formulation was not stable, at room temperature F2 was not stable and F3, F4 and F5 was stable.

Formulation table: Table no.1

Ingredient	F1	F2	F3	F4	F5
Agar (gm/ml)	.25	.35	.50	.75	1
Methylparaben (gm/ml)	.18	.18	.18	.18	.18
Propylene glycol (v/v)	3	3	3	3	3
Citric acid (gm/ml)	1	1	1	1	1
Tulsii	0.5	0.5	0.5	0.5	0.5
Turmeric I	0.5	0.5	0.5	0.5	0.5
Lemon oil	0.5	0.5	0.5	0.5	0.5

Physical observation: Table no.2

Formulation	Appearance	Texture	Sugar crystallization	stickiness
F1	Viscous liquid and translucent	Smooth	Yes	More sticky and gritty
F2	Translucent	Smooth	No	Slightly sticky and gritty
F3	Translucent with uniform consistency	Smooth	No	Non-sticky and grittiness
F4	Translucent with uniform consistency	Smooth	No	Non-sticky and grittiness
F5	Translucent with uniform consistency	Smooth	No	Non-sticky and grittiness

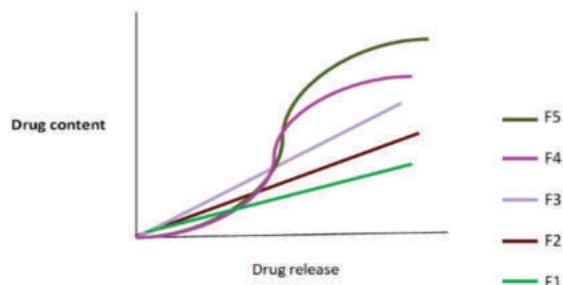
pH and syneresis of the formulation: Table no.3

Formulation	pH	Syneresis
F1	4.02	Yes
F2	3.59	Yes
F3	3.56	No
F4	3.04	No
F5	3.02	No

Viscosity: Table no.4

Formulation	Viscosity
F1	35465
F2	45673
F3	35273
F4	38696
F5	37568

Formulation	% Drug content	% Drug release
F1	72± .04	50± .06
F2	75± .01	51± .01
F3	84± .07	73± .09
F4	89± .03	75± .02
F5	93± .08	82± .04



Conclusion: The edible jellies loaded with curcumin, lemon oil and tulsi extract were formulated by using agar work as gelling agent. Edible jelly have a good stiffness and appearance. F4 displayed good physiochemical properties, stability and anti stress relieving property.

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