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Formulation and Evaluation of Chocolates Containing Papaya

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ABSTRACT:
Chocolate is highly sophisticated and infinitely a versatile food that can be combined to create completely different taste and texture sensations. The objective of the present study is to develop a palatable chocolate formulation of papaya left powder for pediatric administration and to increase patient's desire to consume the medication for dengue. In present investigation chocolate base is prepared by use of cocoa powder, coco butter, Icing sugar, and pharmaceutical grade sugar. Thereafter drug is incorporated to prepared chocolate base. The medicated chocolate prepared is evaluated for appearance, moisture content, drug content and in vitro studies.

Key words: Medicated Chocolate, Pediatrics, Chocolate formulation, papaya

I. INTRODUCTION:

Medicated chocolate is prepared by using chocolate base and the drug is incorporated into prepared chocolate base. As the drug is incorporated within the chocolate and the drug is released from the chocolate, it is called as Chocolate drug delivery system. Chocolate drug delivery system has advantages that include a possible bypass of first-pass effects and avoidance of pre-systemic elimination within the GI tract. Chocolate is also an anhydrous medium and is therefore resistant to microbial growth and to hydrolysis of water-sensitive active agents. Chocolate is well-suited as a vehicle for delivering active agent in many aspects.

Fig No: 1 Medicated Chocolate

II. PLANT PROFILE:

PAPAYA:

- Papain is an enzyme found in and extracted from papaya. It is a powerful digestiveenzyme, thus it is important in digestive processes, involving the breakdown of tough protein fiber.
- Synonyms: Papayotin, vegetable pepsin, tromasin, arbuz, caroid,
- Biological Source: Papain is the dried and purified latex of the green fruits and leaves of Carica papaya Linn.
- Family: Caricaceae.
- Geographical source: The plant is cultivated in Sri Lanka, Tanzania, Hawai, and Florida
- Uses: Anti-oxidant, Improve digestion.

Fig No: 2Papaya Leaf

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III. METHODS AND MATERIALS:

3.1 List Of Chemicals:

Papaya left powder, cocoa butter , cocoa powder, Sodium benzoate, Milk powder and icing sugar were purchased from local market. All the other ingredients used in the study are of analytical grade.

3.2 Methodology:

S.NO	INGREDIENTS	F1	F2	F3	F4
1.	Papaya left powder	0.5	0.5	0.5	0.5
2.	Cocoa powder	0.8	0.8	0.8	0.8
3.	Cocoa butter	1.0	1.25	-	-
4.	Normal butter	-	-	1.0	1.25
5.	Milk powder	1.2	1.2	1.2	1.2
6.	Icing sugar	2.5	3	1.5	2.0
7.	Sodium benzoate	0.04	0.04	0.04	0.04
8.	Total	7.04	7.79	6.04	6.79

Table 1: Formulation Of Medicated Chocolate

For the formulation of each chocolate form drug, cocoa butter, cocoa powder, milk powder, icing sugar and sodium benzoate were used. All ingredients were weighed accurately. Required amount of cocoa butter and icing sugar was taken in porcelain disc. A glass beaker half filled with water was placed on tripod stand. Burner was set below tripod stand to heat water of beaker. On the top of beaker, a porcelain disc containing cocoa butter and icing sugar were placed. When water from the beaker was evaporated, due to the steam porcelain disc was heated and contents were melted. To this melt, a cocoa powder and milk powder were added and mixed. Finally specified amount of drug was added and mixed properly. These melted contents were poured to pre lubricated mould. Moulds were stored in a freeze for 45 min to solidify the contents. This solidified content was removed from mould carefully and evaluated using various evaluation parameters.

IV. EVALUATION:

4.1 Hardness:

A hardness test is typically performed by pressing a specified dimensioned and loaded object (indenter) into surface of the material you are testing. The hardness is determined by measuring the depth of indenter penetration or by measuring the size of the impression left by an indenter.

4.2 Melting point:

The melting point of an organic solid can be determined by introducing a tiny amount into a small capillary tube, attaching this to the stem of a thermometer centred in a heating bath, heating the bath slowly, and observing the temperatures at which melting begins and is complete.

4.3 Weight variation:

Weigh an intact capsule. Open the capsule without losing any part of the shell and remove the contents as completely as possible. Weigh the shell. The weight of the contents is the difference between the weighing. Repeat the procedure with a further 19 capsules selected at random. Determine the average weight.

4.4 Dissolution study:

The in vitro drug release studies were carried out on a eight stationed USP type II dissolution apparatus (paddle method) at 37 °C ± 0.5 °C and 50 rpm for a period of 1h. The dissolution studies were carried in triplicate in 900 ml of the phosphate buffer pH 6.8 from 45 min to 1 hr. and drug content in each sample was analyzed by UV-visible spectrophotometer at 274 nm.

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V. RESULT:

5.1General appearance:

S.NO	FORMULATION CODE	APPERANCE	COLOUR	TASTE	DIMENSIONS (DIAMETER X HEIGHT) CM
1.	F1	Glossy, even shine, no streaks	Dark brown	Slightly bitter	2.8×0.05±0.001
2.	F2	Glossy, even shine, no streaks	Dark brown	Neither bitter nor sweet	2.8×0.05±0.001
3.	F3	Glossy, even shine, no streaks	Dark brown	Semi sweet	2.8×0.05±0.001
4.	F4	Glossy, even shine, no streaks	Dark brown	Sweet, good after taste	2.8×0.05±0.001

Table 2: Characterization of medicated chocolate General appearance and dimensions of chocolates

5.2 Physical evaluation:

S.NO	FORMULATION CODE	HARDNESS (KG/CM²)	MELTING POINT	WEIGHT VARIATION	DRUG CONTENT (%)
1.	F1	2.1±0.01	34℃	4.0±0.001	98.05±0.58
2.	F2	2.4±0.01	36℃	5.0±0.001	98.05±0.58
3.	F3	2.3±0.01	34℃	6.0±0.001	98.05±0.58
4.	F4	3.1±0.01	35℃	6.5±0.001	98.05±0.58

Table 3: Physical Evaluation of medicated chocolate

5.3 Dissolution study:

Time(min)	F1	F2	F3	F4
5	12.82±0.08	12.15±0.34	11.92±0.24	10.12±0.13
10	29.02±0.12	27.54±0.51	25.87±0.21	24.52±0.34
20	43.47±0.45	38.56±0.53	43.24±0.14	38.02±0.42
30	60.75±0.26	66.6±0.42	63.9±0.24	68.85±0.21
40	73.8±0.17	79.2±0.12	72.45±0.42	76.05±0.12
50	86.4±0.14	88.2±0.13	87.3±0.21	86.85±0.34
60	98.45±0.26	99.9±0.21	98.12±0.13	98.56±0.16

Table 4: Dissolution Study of medicated chocolate in saline Phosphate buffer pH 6.8

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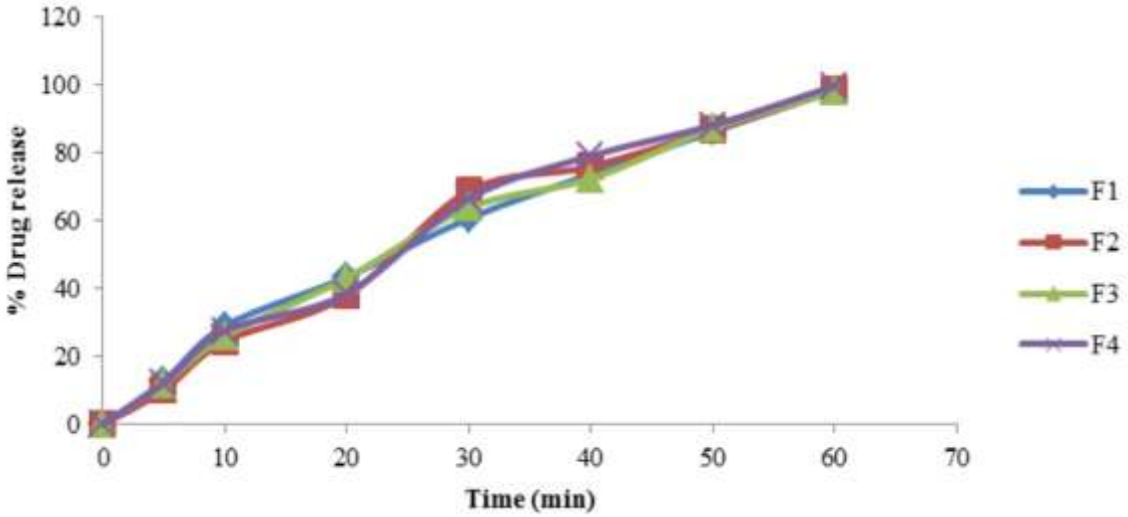

Fig No: 3 Dissolution study of medicated chocolate

VI. CONCLUSION:

Papaya chocolates with satisfactory results were successfully prepared using cocoa butter and normal butter by heating method. Study indicated that both the butters used in the formulation had similar drug release. The f2 chocolate good drug release is obtained All the formulations were stable for a period of month and concentration of sugar played a role in the taste of chocolate and its acceptance. It was concluded that chocolates of various drugswith desirable drug release pattern can be prepared to increase patient compliance of different age groups.

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