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Evaluation of Marketed Herbal Pudina Tablets

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ABSTRACT

Herbal drugs play a very important role in the formulating of not only medicinal products but also cosmetics. There are many local hakeem's around Malegaon practicing in traditional systems of medicines. They used to formulate different dosage forms traditionally. Generally, no scientific data is available on such products. For the current study, the herbal pudina tablet was selected for evaluation purposes by using different parameters such as Physicochemical, Pharmaceutical, and chromatographic evaluation.

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INTRODUCTION:

Assessment of the quality of the herbal drug is directly dependent on the selection of samples for examination. These samples must be truly representative of material undergoing analysis[01].WHO report 80% of the world population relies on the drug from natural origin. A large number of medicinal plants are used in the treatment of diabetes. Diabetes is a metabolic disorder with major complications associated with hyperglycemia, inflammation, foot ulcer, Nerve disorders, and sexual depression. If treatment means to cure the disease, no drug can cure Diabetes completely and some evidence I found practically and theoretically treatment of diabetes in yoga and Ayurveda. Keeping given the importance of the disease and also because green medicine is safe. So, I believed to select an herbal origin drug for this project [02].

MATERIALS AND METHODS

Herbal Pudina tablet was purchased from the local hakeem from Malegaon, District Nashik M.S. and used for the evaluation purpose.

Figure No. 01: Marketed Pudina tablets

Evaluation of Pudina Tablets:

1] Physicochemical evaluation:

Physicochemical parameters such as the percentage of loss on drying (LOD), total ash, acid insoluble ash, were determined as per the Indian Pharmacopoeia [3]. Water and alcohol soluble extractives were estimated by hot extraction and cold maceration according to the

method prescribed by the World Health Organization (WHO) [4]. All determinations were performed in triplicate and the results are presented as mean ± standard deviation.

2] Pharmaceutical Evaluation

- **Physical appearance**

The general appearance of the tablet was studied in shape, color, texture, and odor.

- **Thickness**

The tablet thickness was measured by Varnier calipers. Tablet was put in between two jaws vertically and measured thickness. Five tablets were used for this test and expressed in mm.

- **Angle of repose**

It is the maximum angle that can be obtained between the freestanding surface of the powder heap and the horizontal plane. It was determined by using the fixed funnel method. A specified amount of powder drug was transferred to the funnel keeping the orifice of the funnel blocked by the thumb. When the powder was cleared from funnel then measured its angle of repose and measured in θ [7].

$$\text{Angle of repose } (\theta) = \tan\text{-}1\ h/r$$

- **Bulk density**

It is the ratio of the bulk mass of powder to the bulk volume. It is denoted by ρb. Bulk density is used to find out homogeneity.

$$\text{Bulk density } (\rho b) = M/Vb$$

Where, M is the mass of the sample, Vb bulk volume

- **Tapped density**

It is the ratio of the weight of powder to the minimum volume occupied in the measuring cylinder. Tapped density is determined by placing a graduated cylinder containing a known mass of drug or formulation on a mechanical tapper apparatus which is operated at fixed no. of taps (1000) until the powder bed reached a minimum volume.

8 Tapped density (ρt) = weight of powder blend/Minimum volume occupied by cylinder

- **Carr's index**

Based on the apparent bulk density and the tapped density, the percentage compressibility of the powder mixture was determined by the following formula.

Carr‟s index = Tapped density-Bulk density × 100/ Tapped Density

- **Hausner's ratio**

It is an indirect index of ease of measuring powder flow. Lower Hausner‟s ratio (<1.25) indicates better flow properties than higher ones (>1.25). 10 Hausner‟s ratio = Tapped density/ Bulk density [5, 6].

- **Weight variation**

Weight variation is done by weighing 20 tablets individually calculating the average weight of and comparing the individual weight to the average. The weight variation test is a satisfactory method of determining the drug content uniformity of tablets [5, 6].

- **Hardness**

It is also called as tablet crushing strength. The tablet hardness was determined by Monsanto hardness tester. The tablet was placed lengthwise between the upper and lower plunger and force applied by tuning a threaded bolt until the tablet fractures and measured hardness of tablet in kg/cm.

- **Friability**

It is determined by Roche friabilator, subjects several the tablet to the combined effect of abrasion and shock by utilizing a plastic chamber that revolves at 25rpm, dropping tablet from inches distance operated for 100 revolutions. Pre weighed tablets were dusted and reweighed and according to standard limit, friability should be less than 1%. T is calculated by the formula.

% friability = Initial weight – final weight / Initial weight.

- **In vitro drug release**

The dissolution profile of the pudina tablet was determined at 37ºC at a stirring rat of 100rpm using the USP dissolution apparatus in 900ml of simulated gastric fluid (0.1 N HCL). Various aliquot samples were withdrawn with replacement simulated fluid of the same amount at 5, 10, 15, 30, 45 and 60 minutes respectively. Samples were filtered using Whatman filter paper and taken absorbance at a wavelength of 366 nm by UV spectrophotometer [8].

3] Chromatographic evaluation

1gm of powdered pudina tablet was extracted with 10ml of methanol n test tube and filtered. The filtrate was concentrated to its 4^{th} volume and used. The spot was applied on a silica gel plate and eluted in pure chloroform. The dried plate was sprayed with 1% vanillin sulphuric acid and heated at 110^{O}C for 10 minutes[9, 10].

RESULTS AND DISCUSSION

1] Physicochemical parameters

Table No. 01: Physicochemical evaluation parameter of herbal tablet

Sr. No.	Parameters	Results
1	Total ash	9.34%
2	Moisture content	10.50%
3	Water-soluble extractive value	12.45%
4	Alcohol soluble extractive	9.11%

2] Pharmaceutical evaluation

Table No. 02: Pharmaceutical evaluation parameter of herbal tablet

Sr. No.	Parameters	Results
1	Thickness (mm)	1.4
2	The angle of repose **(θ)**	21.09
3	Bulk density g/ml	0.4549
4	Tap density g/ml	0.4192
5	Carr's Index	12.17
6	Hausner's Ratio	1.10
7	Wieghtvaraiation	422 mg
8	Hardness	5.1 kg/cm^2
9	Friability	0.77 %

3] Chromatographic evaluation

As per the literature, revive of menthol isolation standard Rf value of menthol is 0.30. When the powdered tablet was subjected to TLC Rf value was determined as 0.32 which is very near to menthol Rf value.

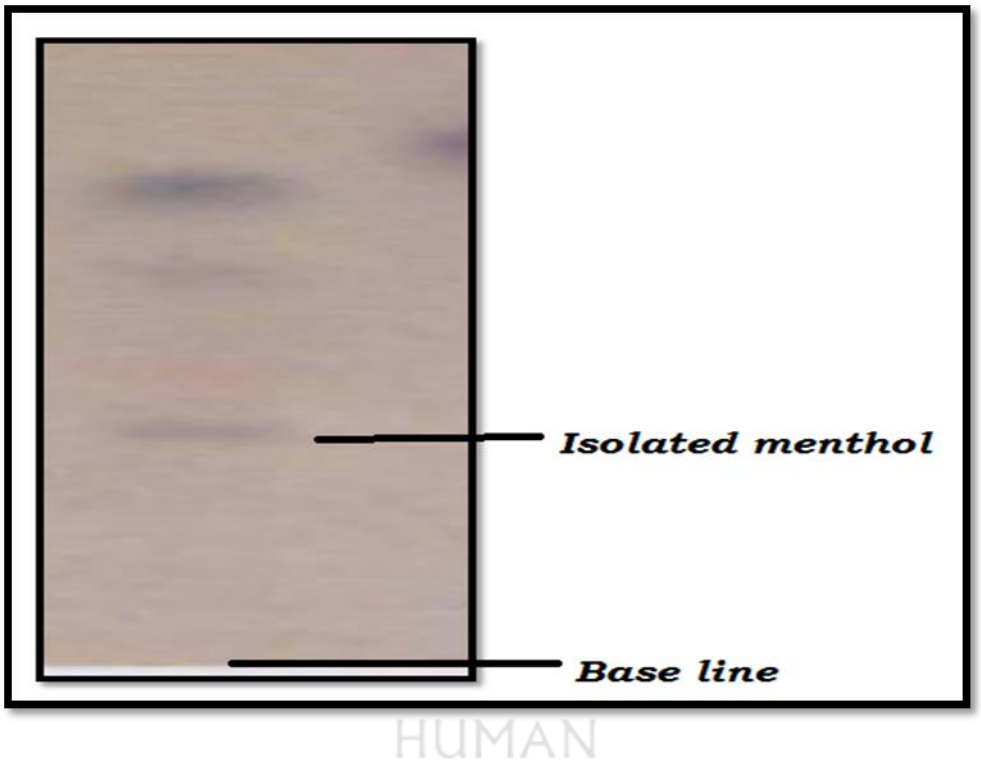

Figure No. 02: TLC chromatogram of marketed pudina tablet

CONCLUSION

From the above study, it was concluded that pudina tables were formulated from *Mentha piperata* plant extract. Certain common evaluation parameters were employed for the evaluation of tablets such as physicochemical, chromatographic and pharmaceutical parameters. Overall tablets showed good results as compared to standard values. Since plant contains menthol as active constituents hence TLC was performed to isolate menthol. Rf value was found to be 0.32 which is very near to standard value i.e. 0.30. This complete evaluation process was performed in the Department of Pharmacognosy of Royal college of pharmaceutical education and research.

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