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Research Article

Preparation And Standardization Of Ayurvedic Nindra Vati

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ABSTRACT

The present work deals with preparation and standardization of Nindra Vati for treatment of insomnia patients. After evaluating crucial macroscopical and microscopical parameters, vati's were formulated. Vati's were evaluated from necessary post-evaluation parameters. Average weight and % weight variation found to be 10.1 ± 10.9 mg and 1.4 % respectively. Hardness and thickness are within the pharmacopeial standards. % friability and disintegration time were observed 0.9 % and 20.30 ± 0.50 min. Total ash, acid soluble ash and water-soluble ash values are 15%, 5% and 5.4% respectively. Water soluble and alcohol soluble extractive values were 12.8% and 5.7%. The formulated nindra vati's are novel formulation and values of evaluations parameters are within the pharmacopeial standards.

INTRODUCTION

Tablets are cheapest formulation and easy to administrate to patients. Tablets are most patient compliance formulation since years. Ayurvedic tablets called 'Vati', formulate using different plants part which richest with active ingredient.[1] Many different vati's are used for the treatment of various disorders effectively. Vati is easy to formulate and evaluate compare to other formulations and highly patient compliance. Vati has more self-llife and easy to store with higher production rate.[2,3] Khas-khas biological name is Vetiveria zizanioides (L.) belongs to Poaceae family. The dry roots are used for formulation and contain sesquiterpenes 3-4 %, sesquiterpenols 18-25 % and sesquiterpenones 7-8 %. Vetiveerol, Vetivone, Khusimol, Khusimone, Vetivenate, Zizaene, Prezizaene, and Vetivene are important chemical constituents present in khas-khas. Khas-khas slows acetylcholine and adrenergic effects on body and relax the CNS. It widely used to treat insomnia and inducing sleep into patients. It has many more uses like in mouth ulcer, epilepsy,

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rheumatism and headache.[4,5] Nutmeg biological name is Myristica fragrans belongs to Myristicaceae family. Alkyl benzene derivatives, alpha and beta pinene, terpenes, myristic acid are major chemical constituents in nutmeg. A psychopharmacological response due to myristicin was reported. Nutmeg is reported for anti-depressant activity.[6] Black paper biological name is Piper nigrum belongs to family Piperaceae. It widely used to induce spices into meal and different formulation. Piper nigrum has been used for medicinal purposes in many parts of the world since ancient times.[7-14] Insomnia is serious problem in recent time for mankind due to living in highly busy life. Many disorders are directly affected to sleep. Treatment of insomnia is necessary and many allopathic formulations are available for treating it. In present study, using of plant constituents Nindra vati was formulated and evaluated successfully and cane be used as new option for treating insomnia.[14-17]

MATERIALS AND METHODS

RAW MATERIALS AUTHENTICATION[18]

Raw materials purchase from local source. Received materials were evaluated macroscopically and microscopically.

PHYTO-CHEMICAL EVALUATION[19]

Phytochemical evaluation provides valuable information related types of chemical present in received powder sample.

PREPARATION METHOD OF NINDRA VATI[20]

The drug of plant origin are dried and made into fine powders separately. These drugs are put into a khalva and ground to a soft paste with the prescribed fluid. This mass is properly grounded and the final stage of pill making starts. These are checked by rolling it in between two finger and it should not stick to it. Pills can be dried in shade or hot air oven. Dried pills are transfer into air tight container.

TEST FOR AVERAGE WEIGHT AND WEIGHT VARIATION[21]

Accurately weighted random 20 tablets on weight balance and noted each tablet weight. Mean of tablet weight is average weight and percentage division of each tablet weight with average weight gives %eight variation.

DISINTEGRATION TIME

Randomly selected 6 tablets placed into assembly tube which continuously deeper into distilled water (2.5L) filled jar with temperature 37± 2°C. Time taken from starting to completely disintegrate tablet is disintegration time. Calculate it for each tablet and means is measured.

HARDNESS TEST

Popular apparatus monsanto hardness tester was used for evaluate tablets hardness. Randomly selected 5 tablets selected and tested.

FRIABILITY TEST

Popular apparatus Roche friabilator was used to evaluate tablet friability. Randomly selected 10 tablets selected and place into friabilator. After 100 successful rotations, all tablet weight were compared with its prior, this calculation provides friability of tablets.

DETERMINATION OF ASH VALUE

TOTAL ASH

About 2-4g of the ground air-dried material was taken and weight accurately. Material was transferred into crucible and heat up to 500-600°C. After completion of operation ash was collected and weight accurately and find out ash value.

% ASH = ((ashed wt.) - (crucible wt.)) x 100/((crucible and sample wt.) - (crucible wt.))

ACID-INSOLUBLE ASH

1 gm of ash was taken in crucible and 25 ml of 0.1N hydrochloric acid was added and heat on hot plate for 5 min. Filter the insoluble matter and wash 3 times with 25 ml water. Collect dried insoluble matter and weight accurately. Based on the readings calculate acid insoluble ash.

Acid insoluble ash (gm) = (Mass of crucible plus ash – Mass of crucible / Mass of sample) x 100

WATER-SOLUBLE ASH

The ash was boiled for 5 minutes with 25ml of distilled water. Residue collected on ash less filter paper, ignited and weight. Percentage of water soluble ash was calculated with reference to the air dried drug.

DETERMINATION OF EXTRACTIVE VALUE

DETERMINATION OF ALCOHOL SOLUBLE EXTRACTIVE

Randomly selected tables were triturated and exact 5 g of the air dried powder was macerated with ethanol (100 ml) in closed flask for 24hours, shaken regularly on each 6 h and allowed to stand for 18 hours. Filtered properly, taken precautions against loss of solvent, 25 ml of the filtrate was evaporated to dryness in a tarred flat bottomed shallow dish, and dried at 105º, to constant weight and weighed. The percentage of alcohol-soluble extractive was calculated with reference to the air-dried drug.

DETERMINATION OF WATER-SOLUBLE EXTRACTIVE

Similar to alcohol soluble ash value, using chloroform water instead of ethanol.

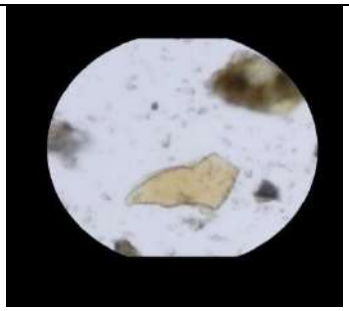
RESULT & DISCUSSION

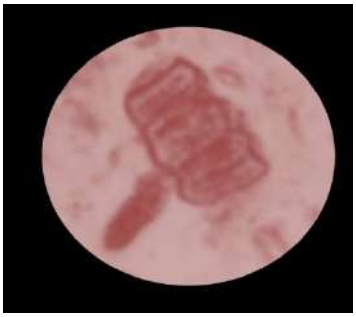
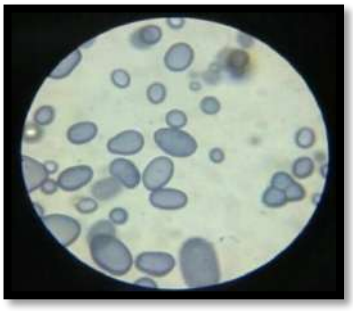
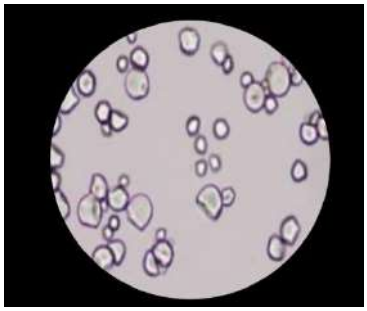
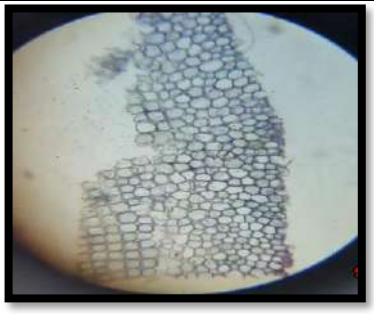
PRE-FORMULATION STUDY

Table 1. Sensory characters of powdered drug

Sr. No.	Ingredient	Color	Odor	Taste	Texture	Uses
1.	Khus-Khus	Light yellow	Musky	Pecliar nutty	Smooth	Treating insomnia
2.	Nutmeg	Orange tan	Sweet spicy	Slight sweet	Smooth	Anti-depression
3.	Black pepper	Dark black	Agreeable and aromatic	Agreeable and pungent	Smooth	Bioavailability enhancer
4.	Punchnamak	Light pink	Acrid	Acrid	Smooth	Preservative
5.	Anar juice	Yellow	Aromatic	Sweet & Sour	-	Binder

Table 2.Microscopy of the ingredients

Myristica fragrans	
	
Xylem vessels with spiral thickening	**Fragment of epithelial cell**
Piper nigrum	

	
Isomeric stone cell	**Starch grain**
Vetiveria zizaniodies	
	
Starch grain	**Parenchyma cell**

Macroscopical results are tabulated into Table.1 and Microscopical results are tabulated into Table 2.

PHYTO-CHEMICAL EVALUATION

Table 3. Phyto-chemical evaluation

Sr. No.	Phyto-constitutions	Vetiveria zizanioides	Myristica fragrans	Piper nigrum
1.	Alkaloides(draganddroff's reagent)	+	+	+
2.	Phytosterols(Liberman Bunched Reagent)	+	-	-
3.	Tannins (Lead acetate solution)	-	+	+
4.	Carbohydrate(Molish test)	-	+	+
5.	Flavonides (Shinoda test)	+	+	+

In the phytochemical evaluation, raw material powders given all tests as per standards which conforms that quality of powders are good. (Table.3)

Table 4. Formulation of Nindra Vati

Ingredients	Quantity taken for 100 times (100 mg)	Quantity taken for 10 times (10 mg)
Khus-khus	Five times	Half time
Nutmeg	Twenty times	Two times
Maricha	Twenty times	Two times
Panchnamak	Fifty times	Five times
Anar juice	Required quantity	Required quantity

Fig.1 Formulation process of Nindra Vati

POST-FORMULATION EVALUATION

Organoleptic properties

Colour	Dark Brown Colour
Taste	Salty
Odur	None
Texture	Smooth

Table 5. Result of post-formulation evaluation

Test	Observation
Average weight and %uniformity (%)	10.1 mg ± 10.9 mg (1.4 %)
Hardness	1.3kg/cm² ± 1.9 kg/cm²
Thickness	5.0 mm ± 0.1mm
Friability (%)	0.9%
Disintegration time (min)	20.30 ± 2.50 min
Total ash value (%)	15 w/w%
Acid insoluble ash value (%)	5 w/w%
Water soluble ash value (%)	5.4 w/w%
Loss of drying (%)	2.5 w/w%
Water soluble ash value (%)	12.8 w/v%
Alcohol soluble ash value (%)	5.7 w/v%

CONCLUSION

In present study, nindra vati is formulated and successfully evaluated. Results macroscopical and microscopical characteristic revels that raw material is highly pure. In Phytochemical evaluation, necessary tests are positive. From organoleptic properties, formulated vati seems like good quality. Post formulation study results are correlated with pharmacopeial standard. On the basis of above data it was concluded that Nindra vati was successfully formulated evaluated and can use for treating insomnia patients.

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CONFLICT OF INREST

Author declares no conflict of interest.

REFERENCES

1. Patadiya N, Dumpala R. A High profile review on new oral clotting factor xa inhibitor: betrixaban. European Journal of Pharmaceutical and Medical Research. 2021; 8(1): 239-247.
2. Kolekar T, Patadiya N. Dissolution Enhancement Technique: Self-Emulsifying Drug Delivery Systems (SEDDS). International Journal of Institutional Pharmacy and Life Sciences. 2020; 10(6):25-39.

3. Kolekar T, Patadiya N. Self-emulsifying drug delivery Systems (SEDDS): A novel dissolution enhancement technique. International Journal of Trend in Innovative Research .2020; 2(5): 10-20.
4. Devprakash S, Srinivasan K, Subburaju T, Sachin S. Antimicrobial activity of alcoholic and aqueous extracts of Vetiveria zizanioides. J Phar Res. 2011; 4(5):1343-1344
5. Nahak G and Sahu RK. Phytochemical evaluation and antioxidant activity of Piper cubeba and Piper nigrum. J Applied Phr. Sci. 2011; 1(8): 153-157.
6. Sapam R, Kalita P, Sarma P, Talukdar N and Das H. Screening of phytochemicals and determination of total phenolic content, anti-oxidant, and antimicrobial activity of methanolic extract of Piper nigrum leaves. Indo American Journal of Pharmaceutical Research. 2018; 8(2): 1354-1360
7. Nwofia G, Kelechukwu C, Nwofia B. Nutritional composition of some Piper nigrum (L.) accessions from Nigeria. Int J Med Arom Plants. 2013; 3:247–54 21.
8. Srinivasan K. Black Pepper and its Pungent Principle-Piperine: A Review of Diverse Physiological Effects. Critical reviews in food science and nutrition. 2007; 47:735-48. 10.1080/10408390601062054.
9. Shilpa P. Nikunj P, Pooja M, Rikin P. Preparation and standardization of chitrakadi vati. J. Pharm. Sci. Innov. 2022; 11 (3):28-35.http://dx.doi.org/10.7897/2277-4572.113230.
10. Makvana P, Patadiya N, Baria D. Design, molecular docking, in-silico admet prediction, synthesis and evaluation of novel quinazoline derivatives as factor XA inhibitors. Int. Res. J. Pharm. 2022; 13(3): 30-37. http://dx.doi.org/10.7897/2230-8407.1303187
11. Patadiya N. Steroids: classification, nomenculture and stereochemistry. International Journal of Universal Pharmacy and Bio Sciences. 2020; 9(5): 28-38.
12. Patel R, Darji J, Patadiya N, Thummar M. Development and evaluation of medicated chewing gum of raloxifene hydrochloride. International Journal of Pharmaceutical and Biological Science Archive. 2021; 9(3): 01-12.
13. Patadiya N, Vaghela V, Padhra Saurav. Optimisation of synthetic condition for 2'hydroxy Chalcone by using mixture design. Asian J. Research Chem. 2023; 16(6): 417-422. doi: 10.52711/0974-4150.2023.00068.
14. Soni D, Patadiya N. A wonderful hormone: estrogen. International Journal of PharmaO2. 2020; 2(5):0362-0368.
15. Dumpala R, Patel J, Patadiya N, Patil C. Solubility and dissolution enhancement of Erlotinib by liquisolid compact technique. International Journal of PharmaO2. 2020; 2(4): 0271-0290.
16. Patadiya N, Vaghela V. A novel and eco-friendly method for synthesis of 3-benzylidene-2-phenylchroman-4-one analogs. Asian J. Research Chem. June 2022; 15(3): 195-199. doi: 10.52711/0974-4150.2022.00033.
17. Patadiya N, Vaghela V. Design, in-silico ADME study and molecular docking study of novel quinolone-4-on derivatives as factor xa inhibitors as potential anti-coagulating agents. Asian J. Pharm. Res. Sept 2022. 12(3): 207-211. doi: 10.52711/2231-5691.2022.00034
18. Patadiya N, Vaghela V. An efficient method for synthesis of flavanone. Asian J. Pharm. Res. Sept 2022. 12(3): 221-224. doi: 10.52711/2231-5691.2022.00039
19. Patadiya N, Vaghela V. An optimized method for synthesis of 2'hydroxy chalcone. Asian J.

Research Chem. 2022; 15(3): 210-212. doi: 10.52711/0974-4150.2022.00036

20. Nikunj P, Nikita P, Vipul V. A review on enzyme inhibitors. Int. Res. J. Pharm. 2021;12 (6): 60-66.http://dx.doi.org/10.7897/2230-8407.1206145
21. Nikunj P and Rajesh D. A high profile review on new oral clotting factor xa inhibitor:betrxaban. European Journal of Pharmaceutical and Medical Research. 2021 8(1), 239-247

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