Formulation and evaluation of herbal chocolate as nervine tonic.

Pallavi D. Pawar*, Akshada A. Bakliwal, Swati G. Talele, Dr. Anil G. Jadhav

Sandip Institute of Pharmaceutical Sciences, Nashik.

Abstract:

The essential target of this study was toformulateand evaluate nutritious chocolate contaning natural nervine tonics that will have the additional recipient learning and memory improving impact with no reactions. Henceforth, in the present examination, an endeavor was to make to get ready chocolate plan of shatavari and bacopamonnieria which enhances the patients compliances and worthiness. The nervine tonic can enhance emotional wellness and additionally execution of a person. The quantative determination of shatavarin and bacoside an in arranged plans were produced by utilizing a basic and reproducible HPTLC technique the Silica Gel GF 254 was utilized as a stationary stage with a dissolvable arrangement of chloroform: methanol while identification were completed by filtering and measuring the crest at 254 nm .The readied chocolate definition was assessed for Organoleptic properties, pH, Blooming test, Preliminary phytochemical screening. Microbial contaminatoin study was done to distinguish the vicinity or nonattendance of microorganisms (E. coli, Staphylococcus and Psudomonasaeuroginosa). Strength study was performed to see the huge changes saw in the physical properties of chocolate.

Keywords: recipient, bacopamonnieria, nervine,organoleptic.

INTRODUCTION:

Recollections are vital to our uniqueness. What each of us recalls is not quite the same as what others recollect, even of circumstances we have been in together. Yet, in our unmistakable courses, every one of us recollects occasions, truths, enthusiastic sentiments and aptitudes - some for a brief timeframe, others for a lifetime. Memory is the capacity of individual to record tangible jolts, occasions; data, and so forth hold them over short or drawn out stretches of time and review the same at later date when required. Poor memory, lower maintenance and moderate review are normal issues in today's distressing and focused world. While we all gripe about our recollections, they are in the most part really great, just beginning to come up short in seniority or certain neurological sicknesses. Age, stress, feelings are conditions that might prompt memory misfortune, amnesia, uneasiness, hypertension, dementia, or to more dismal dangers such as schizophrenia and Alzheimer's ailment (AD). Albeit different manufactured medications for memory improvement are accessible, reactions connected with them make their utilization restricted. In the late years, there has been an ascent in light of a legitimate concern for academic group and pharmaceutical research facilities to investigate the restorative advantages of herbs to enhance memory.

Considering generally acknowledgment of chocolate from peadiatric to gediatric group the essential target of this study was chosen. Chocolates additionally indicates medical advantages including, lessening in hypertension, change in blood stream to cerebrum, counteract cell harm and enhances glucose levels, it likewise diminishes danger of heart assault, raises HDL cholesterol and brings down LDL cholesterol. Along these lines the present exploration article concentrates on plan and assessment of the nutritious chocolate containing bramhi and shatavarinervine tonics that will have additional recipient learning and memory improving impact with no reactions.

MATERIAL & METHOD:

Material:

Shatavari&Bramhi powder, Cocoa powder, Sugar was purchased from Local market, Nashik. Cocoa butter, vanilla, soya lecithin & ethanol were purchased from Research lab Fine Chem.Industries.

Method:

1. Extraction of herbal drug

The extraction was done by cold maceration process. First, the powdered plant material of shatavari and bramhi were macerated with mixture of Alcohol and Water (70:30) in RBF (round bottom flask) for 24 hours with occasional shaking. After 24 hours, the solvents were subjected to filtration and then extracts of shatavari and bramhi were collected.

2. Preparation of Chocolate formulation

1. All the ingredients were weight accurately
2. In one beaker, cocoa powder and sugar was taken and mixed properly.
3. In another beaker, cocoa butter has melted and this melted buyer was added in a powder mixture and mixed properly to get fine consistency.
4. After that soya lecithin as an emulsifier was added and mixed.
5. Finally the herbal drug extract was measured accurately and added in above prepared chocolate.
6. Then vanilla as a flavoring agent was added before going to set in moulds.
7. Then the prepared chocolate containing herbal drug extract was poured in moulds and kept in freeze to set overnight.

Total 6 formulations were prepared by varying the concentration of herbal drug extract used, while the concentration of excipients was kept constant. The compositions of all the 6 formulations were shown in table

3. Estimation of herbal drug:

Estimation of herbal drug i.e. Shatavari&Bramhi was done by HPTLC & TLC chromatographic techniques.

EXPERIMENTAL WORK :

Table 1: Formulation table for composition of chocolate

Contents	F1	F2	F3	F4	F5
Cocoa butter	2.8gm	2.8gm	2.8gm	2.8gm	2.8gm
Sugar	3.6gm	3.6gm	3.6gm	3.6gm	3.6gm
Soya Lecithin	0.05gm	0.05gm	0.05gm	0.05gm	0.05gm
Vanilla	0.05gm	0.05gm	0.05gm	0.05gm	0.05gm
Drug Extract	30mg	45mg	60mg	75mg	90mg

RESULT AND DISCUSSION :

1. Standardization of model herbal drug

Table 2: Result for the standardization of model herbal drugs Shatavari

Parameters	Observed value	Standard value
Ash value	3.98 % w/w	NMT 15%
Acid insoluble ash	1.03 % w/w	NMT 3%
Water soluble ash	10 % w/w	NMT 20%
Water soluble extractive	31.26 % w/w	NLT 20%
Alcohol soluble extractive	41.09 % w/w	NLT 15%
Loss on drying	10.91 % w/w	NMT 15%

Table 3: Result for the standardization of model herbal drugsBramhi

| Parameter	Observed value	Standard value
Ash value	4%	NMT 12%
Acid insoluble ash	1.02%	NMT 6%
Water soluble extractive	39%	NLT 22%
Alcohol soluble extractive	17%	NLT 6%
Loss on drying	5.32%	NMT 18%

2. **Estimation of herbal drug.**
Chromatographic profile of prepared formulation was established by two major techniques of Planer chromatography i.e.

a. **Thin layer chromatograpy (TLC):**
For optimization of mobile phase, initially TLC was performed.

b. **High Performance Thin Layer Chromatography (HPTLC):**

HPTLC fingerprint image of Bacoside (standard) plates after spray at 254 nm and 366 nm given below.
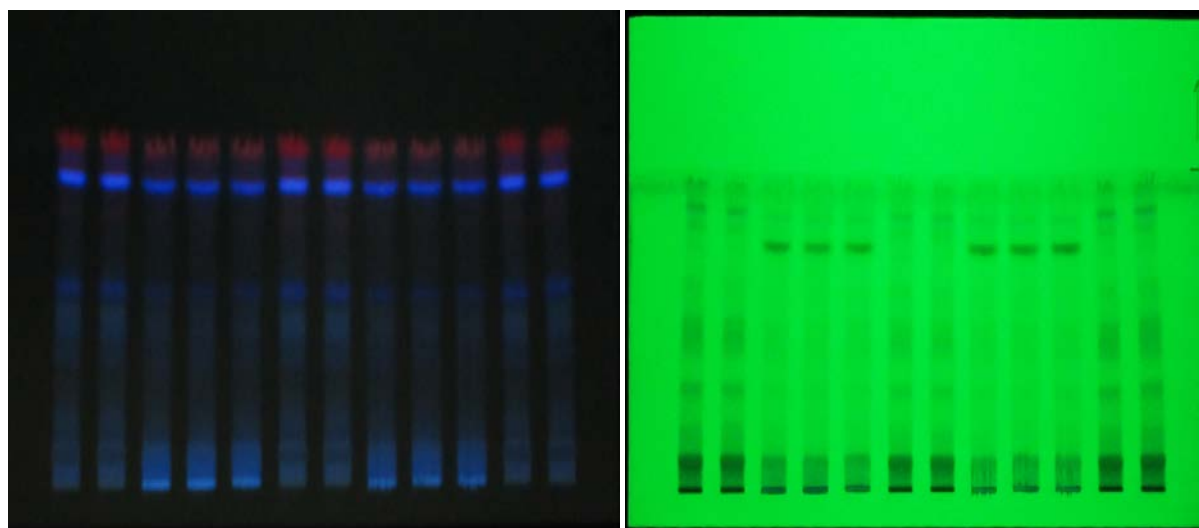
after spray at 254nm   after spray at 366 nm
Figure 1: HPTLC finger print image of Bacoside(standard) plates after spray at 254nm & 366nm.

The HPTLC fingerprint image of Shatavari (standard) plates after spray at 254 nm and 366 nm given below.
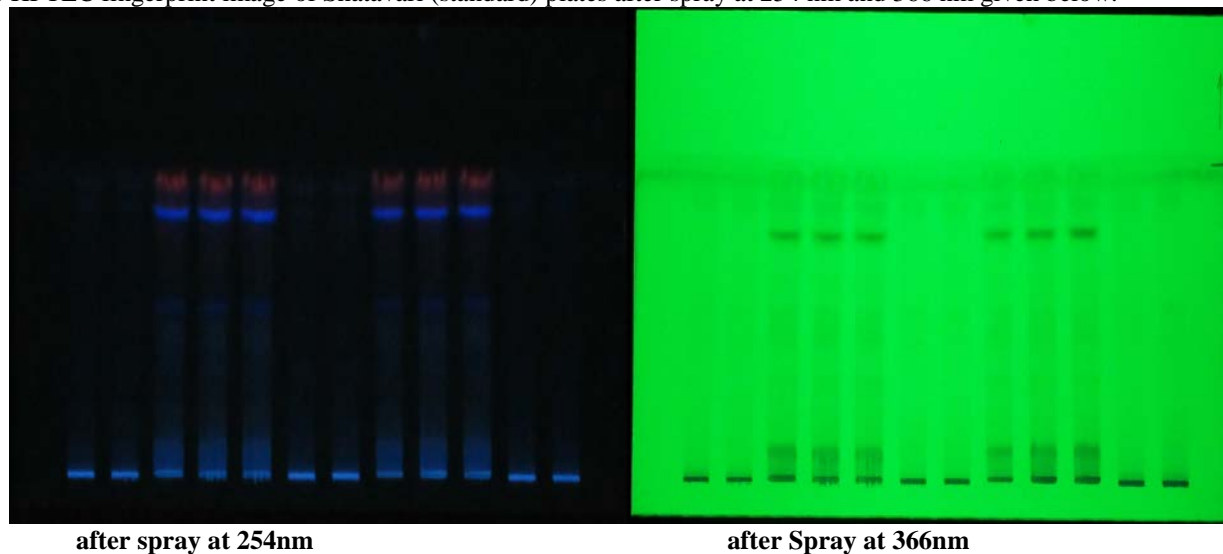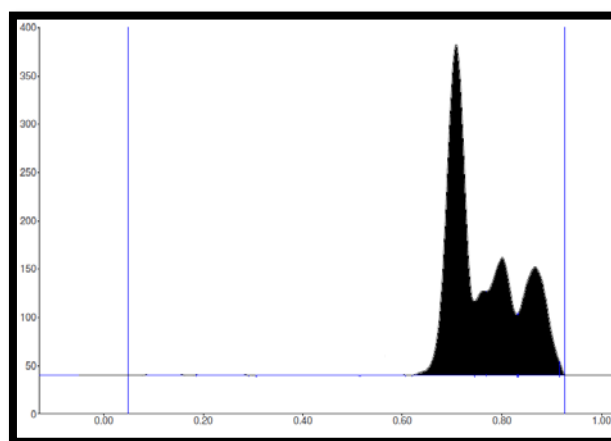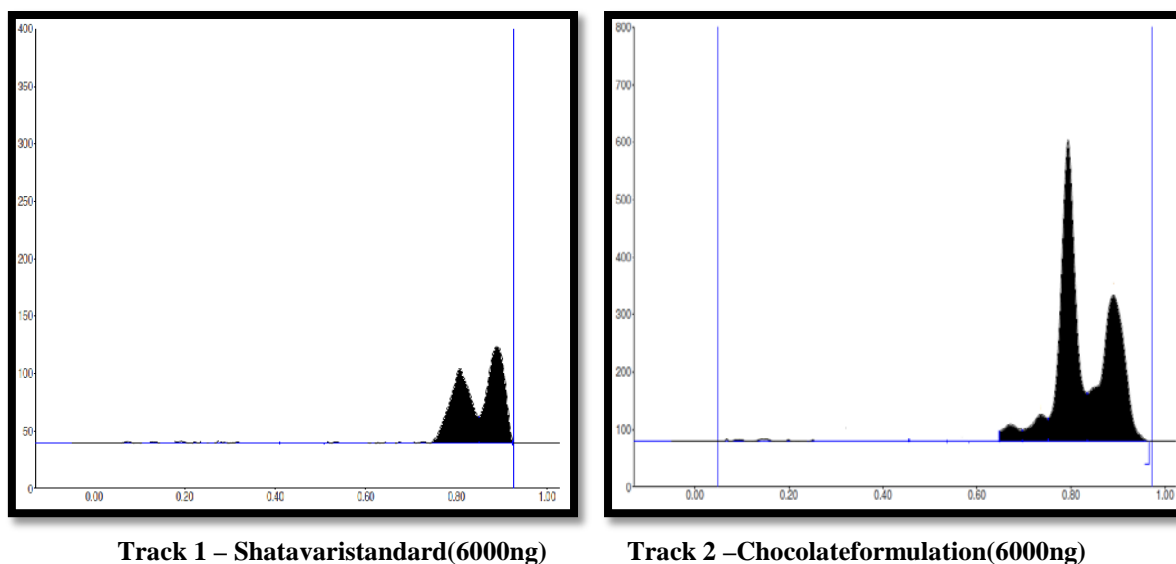

after spray at 254nm   **after Spray at 366nm**
**Figure 2 : HPTLC finger print image of Shatavari(standared) plates after spray at 254nm & 366nm.**

The HPTLC chromatogram (peak disply) of shatavari (standard) and chocolate formulation at concentrations 6000ng and 9000ng.

Track 1 – Shatavaristandard(6000ng)

Track 2 –Chocolateformulation(6000ng)

Track 3-Chocolate formulation (6000ng)
Figure 3 : HPTLC chromatograms (peak display) of shatavari (standard) and chocolate formulation at 6000ng.
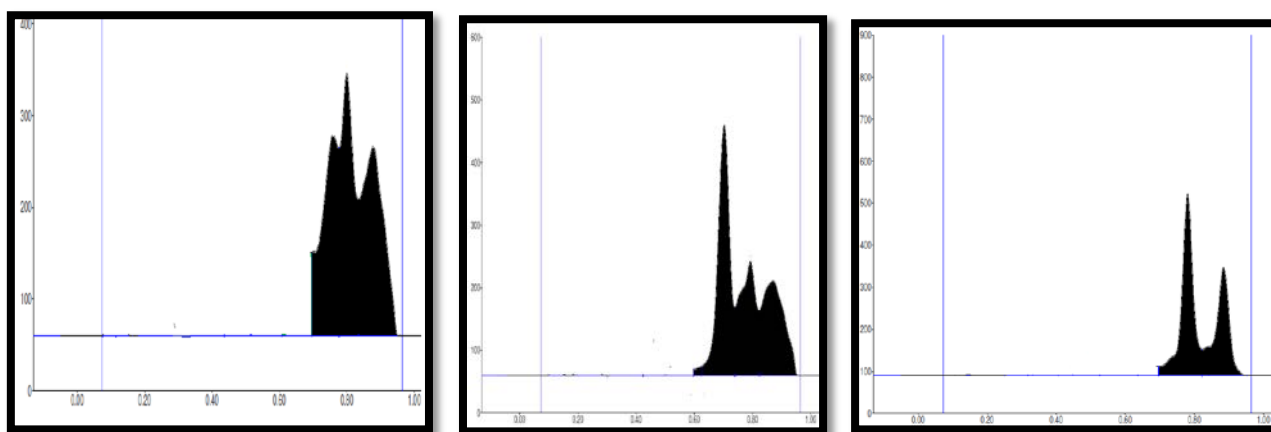
The HPTLC chromatogram (peak disply) of shatavari (standard) and chocolate formulation at concentration range 9000ng
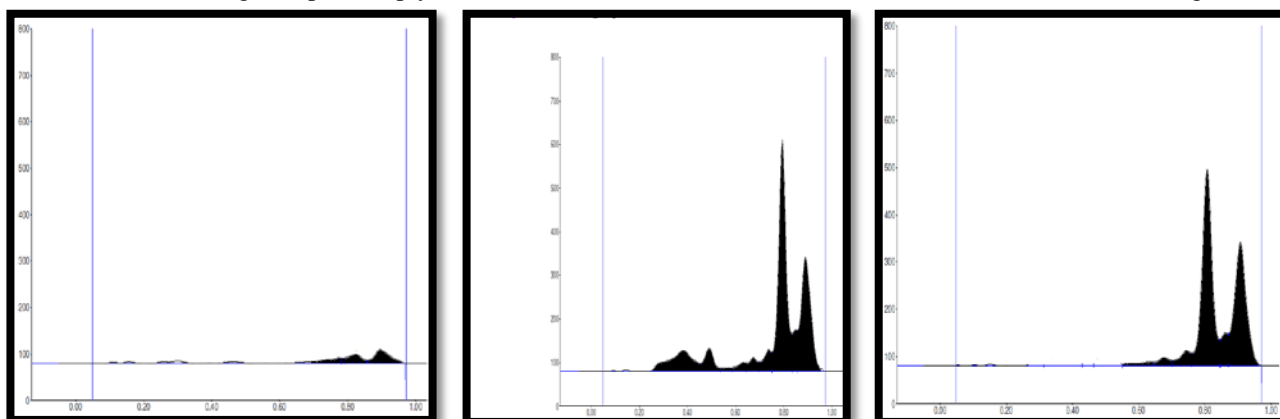
Track 1- Shatavari standard(9000ng) Track 2 – Chocolate formulation(9000ng) Track 3- Chocolate formulation(9000ng)
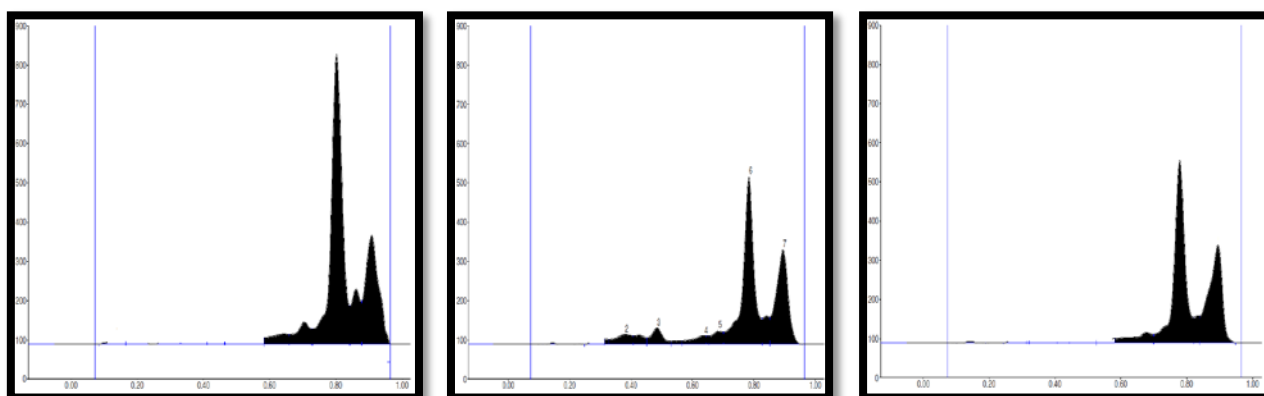**Figure 4 : HPTLC chromatograms (peak display) of shatavari (std) and chocolate formulation at 9000ng.**

The HPTLC chromatogram (peak disply) of Bramhi (standard) and chocolate formulations at concentration ranges 6000ng and 9000ng.

Track 1-Bacopaside standard (6000ng)   Track 2- Chocolate formulation (6000ng) Track 3- Chocolate formulation (6000ng)
Figure 5: HPTLC chromatograms (peak display) of Bramhi (std) and chocolate formulation(6000ng).

Track 1- Bacopaside Standard (9000ng)   Track 2 –Chocolate formulation(9000ng) Track 3 – Chocolate formulation (9000ng)
Figure 6 : HPTLC chromatograms (peak display) of Bramhi (std) and chocolate formulation (9000ng).

Table 6: HPTLC quantitative values of bacoside (standard) and chocolate formulation.

Sample/standard	Application volume	Start R_f	Maximum R_f	AUC	Bacoside present in chocolate(mg)
Bacoside	5µl	0.87	0.90	9262.3	1
Chocolate 60mg	20µl	0.43	0.45	2007.7	0.2167
Chocolate 90mg	20µl	0.42	0.45	2683.0	0.2806

Table 7: HPTLC quantitative values of shatavari (standard) and chocolate formulation.

Sample/Standard	Application volume	Start R_F	Maximum R_F	AUC	Shatavari present in chocolate(mg)
Shatavari	5µl	0.85	0.89	2443.9	1
Chocolate 60mg	20µl	0.53	0.56	543.8	0.2225
Chocolate 90mg	20µl	0.45	0.48	963.2	0.3941s

3. *Organoleptic properties:*
Table 8: Organoleptic properties

Parameters	F1	F2	F3	F4	F5
Colour	Brown	Brown	Brown	Brown	Brown
Odour	Chocolaty	Chocolaty	Chocolaty	Chocolaty	Chocolaty
Taste	Sweet	Sweet	Sweet	Slightly bitter	Slightly bitter
Mouth feel	Smooth & pleasant	Smooth & pleasant	Smooth & pleasant	Smooth & pleasant	Smooth & pleasant
Appearance	Glossy	Glossy	Glossy	Glossy	Glossy

4. *Preliminary phytochemical screening of chocolate formulation:*
Table 9: Preliminary phytochemical screening of chocolate formulation

Phytoconstituents	Shatavari extract	Bramhi extract	Chocolate formulation
Carbohydrate	+	+	+
Protein	-	_	+
Fats	-	_	+
Energy	+	+	+
Glycoside	+	+	+
Alkaloids	+	+	+

Note: + indicates presence of Phytoconstituents - indicates absence of Phytoconstituents

5. *pH of chocolate formulation:*
Table 10: pH of chocolate formulation

Formulation code	F1	F2	F3	F4	F5
pH	6.5	6.3	6.5	6.3	6.5

6. *Blooming test:*
There is no blooming was observed in any formulation.

7. *Stability study:* F3 batch was selected for stability study.

Table 11: Stability study

Parameters	Storage condition	At the time of preparation	After the one month
Colour, Odour, Taste, Mouth feel, Appearance	2-8 °c	Brown, chocolaty, slightly bitter, smooth ,glossy	No change

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 Asparagus racemosus and Bacopamonneri were successfully formulated in the chocolate formulations and contain the active constituents i.e. Shatavarin and Bacoside used for memory enhancement. 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 systemic side effects.

ACKNOWLEDGEMENT:

CONFLICT OF INTEREST:

The authors have declared that there are no conflicts of interest.

REFERENCES:

1. Vasundara Devi P.A , DivyaPriya S., " Antipyretic Activity of Ethanol and aqueous extract of roots of Asparagus racemosus in yeast induced pyrexia" Received: 10 June 2013, Revised and Accepted: 8 July 2013
2. B Priyanka*, Jyothi M Joy, G Avinash Kumar, S Mohana Lakshmi, " Comparative Antioxidant activity of Asparagus racemosus, International Journal of Pharmacotherapy, www.ijopjournal.com. 2(2), 2012,51-56.
3. VollalaVenkata Raman, SubramanyaUpadhya, SatheeshaNayaka, "Effects of Bacopamonnieralinn (bramhi) extract on learning and memory in rats: a behavioral study", Journal of veterinary study, 5,69-74,2010.
4. Achliya G.S., S.G. Wadodkar ,A.K.Dorle, "Evaluation of CNS activity of Bramhighrita", Indian J pharmacol, vol 37,issue 1 33-36,2005.
5. Om Prakash, Gyanendra N Singh Raman M Singh, Satish C Mathur, MeenakshiBajpai, SarojYadav, "Determination of Bacoside a by HPTLC in Bacopamonnieri extract", International Journal of Green Pharmacy,vol 2, issue 3, 173-175,2008.
6. The Ayurvedic Pharmacopoeia of India", Part – II formulation vol.2. 1stedIindia: Ministry of Health and Welfare, Government of India, department of Ayush, page no.-25-27,2008.
7. Kokate C.K., Purohit A.P. & S. B. Gokhale, "Pharmaconocy", 33rd edition , Published by NiraliPrakashan ,page no. 133-254.
8. .DR. Sethi P D, "Quantitative Analysis of Pharmaceautical formulation (high performance thin layer chromatography)", CBS Publishers and Distributers, First edition, page no.15-25, 1996.
9. "Thin-layer chromatography", A laboratory Handbook, 2nd edition, by EgonStahl,Springer International edition,page-421.
10. "Identification of drugs in pharmaceutical formulations by TLC" , 2nd edition, P.S. Sethi, DilipCharegaonkar, CBS publishers & distributers, page- 3-5, 6-8,9-12.
11. "The Indian Pharmacopoeia", Government of India Ministry of health and family welfare, Published by The Indian Pharmacopoeia Commission,Ghaziabad,page-2490,2541.