



<https://africanjournalofbiomedicalresearch.com/index.php/AJBR>

Afr. J. Biomed. Res. Vol. 28(2s) (February 2025); 421- 424

Research Article

Development and Phytochemical Analysis of a Novel Herbal Medhya (Memory booster)-Chocolate

Dr Anagha Mathad^{1*}, Dr Prasanna Mathad²

^{1*} Assistant Professor, Department of Ayurveda Samhita and Siddhant, Parul Institute of Ayurveda and Research, Ishwarpura, Waghodia, Vadodara, Email-anu.as.anagha@gmail.com, M-9449394048

² Professor and HOD Department of Rasashatra and BhaishajyaKalpana, Parul Institute of Ayurveda and Research, Ishwarpura, Waghodia, Vadodara, prasannamathad@gmail.com

***Corresponding Author:** Dr Anagha Mathad

*Assistant Professor, Department of Ayurveda Samhita and Siddhant, Parul Institute of Ayurveda and Research, Ishwarpura, Waghodia, Vadodara, Email-anu.as.anagha@gmail.com, M-9449394048

ABSTRACT-

The *Ayurveda* is a traditional Indian medicine, which is always having the goal to maintain the health of healthy person and to treat the diseased person. The WHO also accepted the same definition of health, which is explained in *Ayurveda* as physical, mental, social and spiritual well-being. So, the mental health is also important, it includes many complex activities among which cognition process is one. The medicines those helps for the proper cognition process, improve the memory, increases the alternes, concentration in the human being is called Nootropic Drugs, which are explained in *Charak Samhita, Chikitsa Sthana, Chapter-1, Rasayana Adhyaya* as *Medhya Ramayana*. The cognition process includes Attention, Language, Learning, Memory, Perception, and Thought, all these helps to obtain the knowledge, Retain the learned things as memory and reproduce whenever required. Due to stress, change in life style now e days the short-term memory issues are observed in the healthy individuals. Hence this study is conducted to assess the effect of “*SMRITI*”- a poly herbal chocolate as memory enhancer (*Medhya Rasayana*) in healthy individual w. r. t. *Vata Dosha* predominant personality. Compare to nootropic herbal formulation which are available in the market are in the powder, Granules, Tablets, Syrup forms but the unique preparation of herbal memory enhancer chocolates are prepared is palatable, easily administered, cost effective and quick results.

Key words- Nootropic drugs, Smriti, Memory, Chocolate

***Author Correspondence email:** anu.as.anagha@gmail.com,

Received - 30/12/2024 Acceptance- 31/01/2025

DOI: <https://doi.org/10.53555/AJBR.v28i2S.6570>

© 2025 The Author(s).

This article has been published under the terms of Creative Commons Attribution-Noncommercial 4.0 International License (CC BY-NC 4.0), which permits noncommercial unrestricted use, distribution, and reproduction in any medium, provided that the following statement is provided. “This article has been published in the African Journal of Biomedical Research”

INTRODUCTION-

Short-term memory could be defined as the memory mechanism which allows us to retain a certain amount of information over a short period of time. Short-term memory temporarily retains processed information that either fades quickly or turns into long-term memory¹. According to *Ayurved* this type of short-term memory

with cognitive process difficulty is observed in *Vata Dosha* predominant personality where person grasps quickly but its memory storage duration will be less (personality is the one which is developed during conception period). Duration of short-term memory is the amount of time that you can remember the sequence of digits is finite. Short-term memory can retain

information for up to 30 seconds². If short-term memory is diminished then systems that depend on it will be altered, like working memory and long-term memory. If person is not able to retain information from short-term memory, operative (working) memory will not be able to properly manipulate this information. With respect to long-term memory, new memories will be affected, as the information passed from short-term memory to long-term memory will be altered. Hence this study is proposed to improve the short-term memory with cognitive difficulties with help of *Medhya Rasayana* in the form of Chocolate for Healthy Individuals¹⁰.

Medhya Rasayana improves the mental abilities including cognitive aspects like Learning and reasoning skills, Focus / Concentration, Intelligence, Mental Perception, Memory or Retention, Creativity. *Medhya Rasayana* is a group of 4 medicinal plants that can be used singly or in combinations.

They are *Mandukaparni* (*Centella asiatica* Linn.), *Yastimadhu* (*Glycyrrhiza glabra* Linn.), *Guduchi* (*Tinospora cordifolia* (Wild) Miers) and *Shankha-pushpi* (*Convolvulus pleuricaulis* Choisy), specially mentioned with wide and different range of applications on different systems^{3 & 9}.

Mandukaparni (*Centella asiatica* Linn. Family – Umbelliferae) having synonyms as -*Manduki*, *Twastri*, *Divya*, *Mahausadhi*. Its Dosha karma – *Kapha-Pitta shamak.*, It has *Tikta* and *Madhura-Rasa*, *Laghu* and *Sita-Guna*⁴.

Yastimadhu (*Glycyrrhiza glabra* Linn., Family – Fabaceae) having the synonyms as- *Yas-timadhuk*, *Klitaka*. Its *Dosha karma* – *Vata-pitta shamak*, Its *Rasa* is *Madhur*, *Guru*, *Snigdha* *Sita* are its *Gunas*⁴.

Guduchi (*Tinospora cordifolia* Willd. Miers, Family – Menispermaceae), its Synonyms as follows -*Amrita*, *Madhuparni*, *Chinnamula*, *Cakra-lakshanika*, *Amritavalli*, *Chinna*, *Chin-nodhbhava*, *Vatsadani*, *Jivanti*, *Tantrika*, *Soma*, *Somavalli*, *Kundali*, *Dheera*, *Vi-shalya*, *Rasayani*, *Candrasaha*, *Vayastha*, *Mandali*, *Devanirmita*, Its *Dosha karma* are – *Tri-dosha shamak*, It has *Tikta*, *Kasaya*, *Madhur Rasa*, its *Gunas* are *Guru*, *Snigdha* *Usna*⁴.

Shankhapushpi (*Convolvulus pleuricaulis* Choisy. Family – Convolvulaceae): its synonyms as follows - *Ksheerpushpi*, *Mangalyakusuma*. Its *Dosha karma* – *Vata-pitta shamak*, it has *Tikta* and *Madhur Rasa*, its *Gunas* are *Snigdha*, *Picchil* and *Sita*⁴.

METHODOLOGY-

In market many herbal memory enhancers are available. Those are indicated for various pathological conditions. They are not available in palliative form. These medicines are also required vehicle (*Anupana*) to consume and difficult to take away with person. It is prepared in form of chocolate as memory enhancer with poly herbal preparation. It can be consumed on daily basis for selected healthy individuals. This type of unique herbal preparation will be more effective those who are having short term memory. The chocolate mode of administration of herbal preparation is selected because Palatable, easy to carry, fixed dose, easy administration.

A. SOURCE OF DATA

1. Literary source:

1. All classical text books pertaining to the study.
2. Contemporary text books and paramedical books related to short term memory, cognitive process.
3. National and international symposiums, conferences, workshops, journals and websites to gather the information about the *Medhya Rasayana* and short-term memory.

Drug source

- *Mandukaparni* (*Centella asiatica* Linn.), *Yastimadhu* (*Glycyrrhiza glabra* Linn.), *Guduchi* (*Tinospora cordifolia* (Wild) Miers), *Shankhapushpi* (*Convolvulus pleuricaulis* Choisy) raw drugs. Collected from PIAR Teaching Pharmacy.

- The extract of selected drugs, milk collected to prepare chocolate from PIAR Teaching Pharmacy.

METHOD OF PREPARATION OF MEDICAMENTS REQUIRED FOR THE STUDY:

-I] PROCUREMENT & PREPARATION

a) RAW MATERIAL PROCUREMENT:

Herbal ingredients and required ingredients like coco powder, honey, and milk are sourced from trusted verified sources⁶.

b) PREPARATION OF DRUG:

Preparation carried out as per Standard Operating Procedure for chocolate in Central research lab of Parul Institute of Ayurved and Research - PIAR (Ayurveda).

1. The extraction of *Mandukaparni* (*Centella asiatica* Linn.), *Yastimadhu* (*Glycyrrhiza glabra* Linn.), *Guduchi* (*Tinospora cordifolia* (Wild) Miers), *Shankhapushpi* (*Convolvulus pleuricaulis* Choisy) by essential technique.

2. Coco powder / coco butter mixed with honey and emulsifier added by whisking. (After cooling of liquefied coco butter add the honey)

3. Mixed the poly herbal extract and poured it in fixed dosage moulds.

4. Keep the prepared chocolate in the fridge for 5 hours.

OBSERVATIONS -

Colour of the chocolate- brown, sweet -taste, chocolate - odour, and fine chocolate was formed.





Analytical report of Chocolate.

Table-1- Physical General Properties observed for 24 hours as follows

Before 24 hours	After 24 hours
Brown chocolate colour	No change
Taste	same
Odour	Odour same
Texture	No change

Table-2 - Stability Analysis after the 3 months of preparation of Poly Herbal Chocolate done.

After 24 hours	After 3 months
Brown chocolate colour	No change
Taste	same
Odour	Odour same
Texture	No change

Phytochemical analysis of herbal drug was done by HPTLC & TLC chromatographic techniques and Analysis as follows

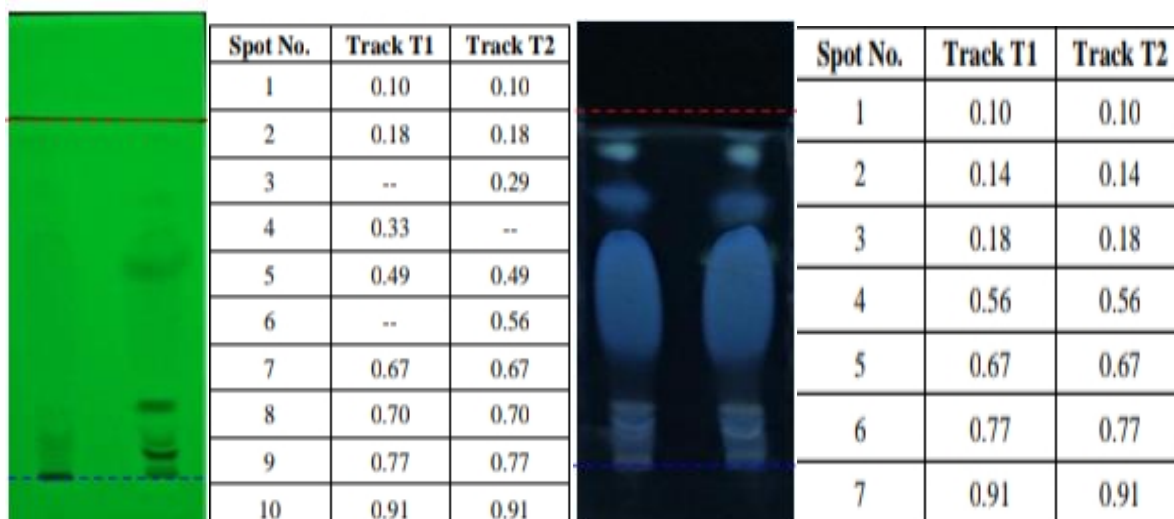


Table-3 - Nutritional value of Chocolate.

SL NO	PARAMETERS	RESULTS	LIMIT PER API
1	TOTAL CARBOHYDRATE	53.75%	NA
2	TOTAL PROTEIN	4.93%	NA
3	TOTAL FAT	31.02%	NA
4	TOTAL SUGAR	20.90%	NA
5	TOTAL ENERGY	503.37Kcal	NA

Table-4 - Mineral Analysis.

SL NO	PARAMETERS	RESULTS	LIMIT PER API
1	CALCIUM	0.0031%	NA
2	SODIUM	0.0034%	NA
3	PHOSPOROUS	NIL	NA

DISCUSSION-

The Herbal extract of *medhya* drugs was collected by essential technique. Cocoa butter, extract and emulsifier was added with mixture of honey and sugar. Stored in Refrigerator using different molds. This study states that ‘Smriti’ herbal chocolate contains with different nutritional and mineral values like carbohydrate, fat, protein, calcium, sodium. The formulation and

preparation of any product is incomplete without proper stability studies of the prepared product. A general method for predicting the stability of any product is accelerated stability studies, where the product is subjected to elevated temperatures as per the ICH guidelines⁸. It had 6.5 pH value.

Physical properties like odour, taste, texture, colour was same after the observation within 24 hours and 3 months

of preparation. There was no melting, increase in stickiness, texture was well maintained with same taste and colour. The weight of chocolate remained same even after 3 months of preparation. There was no extrarenal coating or layer on the chocolate. The HPTLC test shows that the presence of steroids (stigma sterol and betulinic acid), coumarins (scopoletin) and flavonoids (β -carotene and chlorogenic acid). It helps to improve the memory and learning hence the new form medicine was prepared as herbal chocolate. It acts as palatable, easy for administration, drug delivery system bypass the first pass effects and avoid the pre systemic elimination in GI Tract.

CONCLUSION –

The herbal chocolate prepared with *medhya rasayana* includes *Mandukaparni* (*Centella asiatica* Linn.), *Yastimadhu* (*Glycyrrhiza glabra* Linn.) ,Guduchi (*Tinospora cordifolia* (Wild) Miers), *Shankhapus - hpi* (*Convolvulus pleuricaulis* Chois) their extract were used to prepare the chocolate. This chocolate shown no changes in the physical and chemical properties even after the 3 months of preparation. Its oral administration with one chocolate per day enhances the memory and learning.

Acknowledgement

We are very much thankful to the Vice President, Research and Development Cell, Parul University and Director, Research and Development Cell, Parul University for providing fund to carry out this Research study.

REFERENCES-

- 1-<https://www.cognifit.com/science/shortterm-memory>
- 2-<https://www.cognifit.com/science/shortterm-memory>
- 3-<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3459457/>
- 4- .Kumar N, Singh AK (2013) Medhya dravya in ayurveda-a critical review. International Ayurvedic Medical Journal 1: 1-4.
- 5-“Identification of drugs in pharmaceutical formulations by TLC”, 2nd edition, P.S. Sethi, Dilip Charegaonkar, CBS publishers & distributors, page-3-5, 6-8, 9-12.
- 6- 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
- 7- Om Prakash, Gyanendra N Singh Raman M Singh, Satish C Mathur, Meenakshi Bajpai, SarojYadav, “Determination of Bacoside a by HPTLC in Bacopa monnieri extract”, International Journal of Green Pharmacy, vol 2, issue 3, 173-175,2008
- 8- Pawar, P. D., Bakliwal, A. A., Talele, S. G., & Jadhav, A. G. (2019). Formulation and evaluation of herbal chocolate as nervine tonic. Journal of Pharmaceutical Sciences and Research, 11(5), 1808-1813.
- 9- Effect of *Convolvulus pluricaulis* Choisy. On learning behaviour and memory enhancement activity in rodents, Nat Prod Res, 22 (16) (2008), pp. 1472-1482

- 10- Kolekar SY, Mulani AS, Tamboli AF, More NH and Misal AA. Formulation and Evaluation of Paediatric Herbal Chocolate. European Journal of Biomedical and Pharmaceutical sciences, 8(6), 458-462(2021)