



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Paper

A Review on Development of Nootropic Adaptogenic Herbal Lozenges for Stress Alleviation

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ARTICLE INFO

Published: 18 Mar 2026

Keywords:

Adaptogens, Nootropic, Lozenges, withania somnifera.

DOI:

10.5281/zenodo.19086359

ABSTRACT

Stress has been defined in many ways by many different people. It has been a topic of interest to medical professionals, social scientists, anthropologists, psychologists, and even zoologists. Stress has become a major health concern affecting not only health but also intelligence, learning and psychological well-being. Due to the side effects and toxic effects of medications and chemicals and emergence of alternative therapies, herbal medicines having nootropic and adaptogenic properties have attracted vast scientific interest, thus promoting their applications in the management of stress and cognitive dysfunctions. Many medicinal herbs with proven antioxidant properties along with memory enhancing and adaptogenic values have been found beneficial in the management of neurocognitive disorder like memory and cognitive dysfunctions viz, Withania somnifera (Ashwagandha), Centella asiatica (Gotu Kola), Centropeda pleuroperma. -Convovulaceae (Shankhpushpi). Nootropic adaptogenic herbal lozenges is a formulation that has been worked out in the current manuscript for the management of stress. Lozenges are locally active on the surface of the oral cavity; they release active substances slowly in the buccal mucosa or in the mouth. The novelty lies in the applicability of lozenges as drugs taken through the buccal mucosa by which the entire mouth cavity is targeted due to the placement in the oral cavity. Thus the nootropic and adaptogenic herbal drug composition in form of lozenges would be most acceptable and effective form, for the management of stress..

INTRODUCTION

Stress is characterized as a condition in which a variety of internal or external, actual or perceived difficulties or stimuli—referred to as stressors—

threaten to upset homeodynamic balance. In order to maintain this ideal homeodynamic state within a physiological range, organisms have evolved a highly complex system known as the stress system, which aids in self-regulation and

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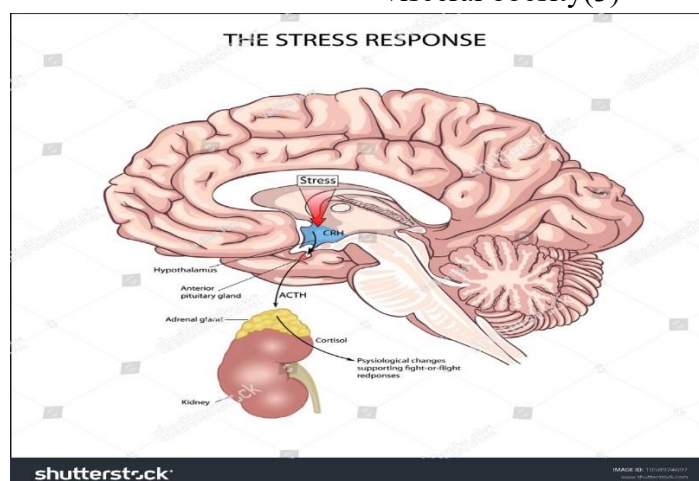
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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



adaptability by rerouting energy in accordance with the demands of the moment.(1)The two main components of the stress response are typically thought to be the sympathetic adrenomedullary (SAM) system and the hypothalamic pituitary adrenocortical (HPA) axis. It is commonly known that these systems play a key role in energy mobilization and the redistribution of nutrients and oxygen to active organs and tissues, which is a metabolic function that extends beyond stress.(2)

There are two types of stress: acute and chronic. Acute stress causes brief physiological alterations that can be reversed with prompt medical attention and the achievement of homeostasis in a constrained amount of time. However, long-term or chronic stress can cause major health harm, including metabolic syndromes, obsessive-compulsive disorder (OCD), generalized anxiety disorder (GAD), severe cardiovascular problems, hypertension, endocrinological problems, and visceral obesity(3)



STRESS AND ITS TYPES: -

Some stress sticks around a while others pass fast. What triggers it shapes how it feels too.

2.1 Acute Stress

When danger shows up suddenly, the body reacts fast. This kind of pressure doesn't last long. Instead of fading slowly, it hits quickly because something urgent just happened. The nervous system jumps into high alert without delay. Because of that shift, energy surges through muscles and senses sharpen right away.

2.2 Chronic Stress

Persistent strain sticks around when life throws unending challenges - jobs that drain, money troubles, constant doctor visits. When tension lingers, minds fray just as bodies do.

2.3 Psychological Stress

When feelings like worry or tension build up, a person might feel mentally worn out. Pressure from others can weigh heavily on someone's mind. Fear sometimes takes hold without warning. Anxiety creeps in during uncertain times. Social demands quietly add strain over days.

2.4 Physical Stress

When the body gets hurt, sick, or pushed by harsh weather, it reacts. Tough surroundings take a toll just like wounds do. Being unwell triggers strain much the way accidents do. Harsh cold or heat weighs on the system similarly to disease.

Persisting under pressure might chip away at your ability to recall things. One effect slips into how well the body fights off illness. Hormones shift when tension stays too long

ADAPTOGENS

Originally, adaptogens were described as compounds that improve the "state of non-specific resistance" under stress, a physiological state associated with a number of neuroendocrine-immune system illnesses. Adaptogens have been shown to have neuroprotective, anti-fatigue, antidepressant, anxiolytic, nootropic, and central nervous system stimulating properties in studies conducted on animals and isolated neuronal cells. Furthermore, several clinical studies show that adaptogens have an anti-fatigue impact that boosts mental work capacity in the face of stress and tiredness, especially in terms of improved attention and tolerance to mental depletion. It was shown that the hypothalamic-pituitary-adrenal axis was linked to the stress-protective effect of adaptogens, which was linked to the maintenance of homeostasis through many modes of action.(4)

NOOTROPICS

A nootropic drug maximizes the potential of the brain and improves cognition. Known as "smart drugs," nootropics were created about thirty years ago to treat cognitive impairments. Nootropics come in a wide variety of forms and serve a variety of purposes, from sedation to stimulation. One of the most studied subjects in pharmacology and neuropharmacology today is nootropics. In 1972, C. E. Giurgea was the first to coin and define the term "nootropic." The Greek word *noos* (mind) and *tropein* (towards) are the roots of the word "nootropics," which means "acting upon the mind" in Greek. It has been used to characterize psychotropic medications that have a direct and selective impact on the cerebral cortex's integrative functioning(5)

LOZENGES

Lozenges holding medicine come in flavors, meant to melt gently in the mouth. Some start as

melted mixtures poured into shapes - using gelatin or sugar blends like sucrose and sorbitol. Others form under pressure, squashing powdered ingredients into dense pieces. When made by pouring liquid into molds, they often get called pastilles instead. If pressed together like compacted powder, names such as troches might show up on labels. These slow-dissolving formats help people who struggle swallowing pills manage treatment more easily. A steady trickle of active substance keeps levels stable right inside the mouth area. Throat linings soak up medication bit by bit through close contact with dissolving layers. For ages, these small discs have eased light discomforts from irritated throats. Their role grew wider over time, carrying numbing agents directly where needed. Germ-fighting substances also travel this way when aimed at local infection sites.(6)

TYPES

Some dissolve slow in the mouth - these come in shapes that fit easy, carry medicine plus taste good too. Called troches sometimes, or pastilles instead. Softness defines pastilles more; they hold lots of sugar, maybe gelatin mixed in. Hard kinds often use syrup and sugar blended tight, glued with something sticky like acacia. Machines press certain ones together strong, squeezing them into form under heavy force. Slow melting in the mouth is what lozenges aim for. Their job isn't crumbling but vanishing bit by bit through dissolution. Heat-resistant components work best when mixing up custom lozenges on demand. A fresh wave of soft and chewable types now appears again in pharmacies, gaining favor fast. Polyethylene glycol forms the core of most softer versions, while their chewy cousins rely on gelatin softened with glycerine.(6)





Herbal Agents Used in Nootropic Adaptogenic Lozenges

1. Ashwagandha (*Withania somnifera*)

Active Constituents

- Withanolides
- Alkaloids
- Saponins

Pharmacological Properties

- Adaptogenic activity
- Anti-stress and anxiolytic effects
- Neuroprotective activity
- Cognitive enhancement

Rooted in ancient healing practices, Ashwagandha - known scientifically as *Withania somnifera* - has quietly stepped into modern awareness. Because of its role in helping bodies handle daily strain, it's often studied for calming effects. Anxiety symptoms show change too. Behind these outcomes lies a mix of natural ingredients found in the plant, especially substances called withanolides. These components interact with key systems regulating stress hormones. One such system is the HPA axis, which manages how we respond to pressure. When this network adjusts due to supplementation, cortisol tends to ease downward. As hormone shifts occur, emotional balance can follow along similar lines. (7)



2. CENTELLA ASIATICA

Gotu Kola is another important herb known for its cognitive and neuroprotective properties.

Active Constituents

- Asiaticoside
- Madecassoside
- Triterpenoids

Found across warm regions, it often grows near water and gets harvested for food or flavoring. People have turned to this herb for centuries because it supports brain function and physical stamina. Healing cuts, calming nerves, easing seizures - its uses stretch back through generations. Doctors once gave it to children facing mental development challenges along with those struggling with constant worry. Studies show it helps people remember things more quickly and pick up new information faster. When harmful substances like lead acetate harm nerve cells, extracts from this plant may reduce the damage. Its role in shielding brain tissue comes down to how it handles internal stress at a cellular level.(8)



3. SANKHPUSHPI

Chemical Constituents

Major phytochemicals present in Shankhpushpi include:

- Alkaloids (Shankhpushpine)
- Flavonoids
- Glycosides
- Coumarins
- Triterpenoids
- Steroid

From ancient practice comes a plant called Shankhpushpi - botanical name *Convolvulus pluricaulis* Choisy. This herb shows up in traditions aiming to sharpen thinking, ease anxious thoughts, while also tending to overall mind balance. With traits that shield nerve cells, lower swelling, plus fight oxidative harm, it finds frequent use as a nourishing support for the brain. People sometimes turn to it when facing low mood, restless feelings, seizures, or fading recall. Research points toward real influence in how nerves respond, especially around worry, remembering things, staying steady under pressure(9)

CONCLUSION

Stress takes a toll on the body, yet certain plant-based remedies might help ease its grip. Herbs that sharpen thinking often double as helpers when life feels overwhelming. Instead of pills, some prefer slow-dissolving tablets held under the tongue. These small discs can carry active ingredients straight into the bloodstream. Plants like ashwagandha, gotu kola, sankhpushpi work quietly, adjusting how we respond to pressure. What makes them different is not quick fixes but gradual balance over time. Some botanicals support mental clarity while others calm nervous energy. This review discusses stress physiology, the role of adaptogens and nootropics, pharmacological properties of selected herbs, formulation strategies for herbal lozenges, and their potential applications in stress alleviation.

REFERENCES

1. Agorastos A, Chrousos GP. The neuroendocrinology of stress: the stress-related continuum of chronic disease development. *Molecular Psychiatry* 2021 27:1. 2021 Jul 21;27(1):502–13. doi:10.1038/s41380-021-01224-9 PubMed PMID: 34290370.
2. Koolhaas JM, Bartolomucci A, Buwalda B, de Boer SF, Flügge G, Korte SM, et al. Stress revisited: A critical evaluation of the stress

concept. *Neurosci Biobehav Rev.* 2011 Apr 1;35(5):1291–301.

doi:10.1016/j.neubiorev.2011.02.003

PubMed PMID: 21316391.

3. Salve J, Pate S, Debnath K, Langade D. Clinsearch Healthcare Solutions, Thane, IND 3. Family Medicine, Prakruti Hospital. 2019. doi:10.7759/cureus.6466
4. Panossian A, Wikman G. Effects of Adaptogens on the Central Nervous System and the Molecular Mechanisms Associated with Their Stress—Protective Activity. *Pharmaceuticals* 2010, Vol 3, Pages 188-224. 2010 Jan 19;3(1):188–224. doi:10.3390/ph3010188
5. Patel J, King A, Malempati M, Patel M. Understanding nootropics and cognitive enhancement: mechanism of action and ethical considerations. *Health Open Research.* 2024 Jan 9;6:2. doi:10.12688/healthopenres.13504.1
6. Pothu R, Rao Yamsani M. LOZENGES FORMULATION AND EVALUATION: A REVIEW [Internet]. Report. Available from: www.ijapronline.org
7. Haber M, Czachor A, Kula P, Juśkiewicz A, Grelewicz O, Kucy N, et al. Ashwagandha as an Adaptogen: Its Influence on Sleep Patterns, Stress Response, and Anxiety in Modern Life. *Journal of Education, Health and Sport.* 2024 Sep 24;68:55327. doi:10.12775/jehs.2024.68.55327
8. Meena H, Pandey HK, Pandey P, Arya MC, Ahmed Z. Evaluation of antioxidant activity of two important memory enhancing medicinal plants *Baccopa monnieri* and *Centella asiatica*. *Indian J Pharmacol.* 2012 Feb;44(1):114–7. doi:10.4103/0253-7613.91880
9. Dev R, Pal Singh A, Pal Singh A, Bala K. A Comprehensive Review of Shankhpushpi: Exploring its Pharmacological Properties and

Therapeutic Potential. *Advance Journal of Pharmaceutical Research & Review* [Internet]. 2024 [cited 2026 Mar 11];1(5):41–7. Available from: www.ajpr.com

HOW TO CITE: Fiza Nazreen, Aayushi Prasad, Dharmesh Koushal, Shweta Ram, Dr. Gyanesh Kumar Sahu, Suchita Wamankar, A Review on Development of Nootropic Adaptogenic Herbal Lozenges for Stress Alleviation, *Int. J. of Pharm. Sci.*, 2026, Vol 4, Issue 3, 1973-1978. <https://doi.org/10.5281/zenodo.19086359>

