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Research Article

Formulation And Evaluation Of Ashwagandha Kalpa Of Ayurveda For Apasmara (Epilepsy)

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ABSTRACT

At various points throughout the life cycle of a pharmaceutical product, analytical procedures must be established. If these tasks are not appropriately simplified based on scientific knowledge and process understanding, it could result in an extremely expensive and time-consuming approach. The pharmaceutical industry is constantly looking for new guidelines or components to add to or replace the current components of the quality and risk management system. The idea of Quality by Design was first introduced by renowned quality expert Joseph M. Juran. (QbD). Analytical method development, or AQbD, can be thought of as an extension of QbD. A methodical approach to development known as "Quality by Design" starts with predetermined objects and places a strong emphasis on process control, product and process understanding, and understanding. contemporary method approach. The current review article's primary goal is to outline the various QbD processes while also addressing implementation-related issues. ATP (Analytical Target Profile), CP (Performance Attributes), MODR (Method Operable Design Region), Control Strategy, and Continual Method Improvement are all included in the creation of an analytical method

INTRODUCTION

A Seizure is a paroxysmal alteration of neurological function caused by the excessive hypersynchronous discharge of neurons in the brain. The Word epilepsy is derived from the Greek epilepsia, which in turn can be broken into epi =UPON & Lepsis= To take & hold of or a Seizure.(2) Epilepsy is the condition of

recurrent,unprovoked Seizure I.e nerve cell activity in the brain is disturbed causing Seizure.(1)

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Figure 1 : Person Suffering from Seizure .

In ayurveda there are num. Of way by which epilepsy symptoms can treat and one of the common method is Kalpa. The literally meaning of word kalpa is to grow or to increase. Kalpa is kind of ayurvedic rejuvenation therapy or age reversing treatment that retards the ageing process by boosting immunity , vitality & vigour. The concept of Kalpa chikitsa in the mangement of chronic disease is known since samhita kala .The kalpa chikitsa is a unique approach of therapy, where a specific drug is administered in a gradually increasing dose .

Classification of Seizure & Epilepsy:

Table 1. Seizure types and Characteristics of 1981 proposal for revised clinical and electroencephalographic classification of epileptic Seizure.

Generalized Seizures – Produced by the entire brain	Symptoms
1. Generalized tonic clonic (“grand mal”)	Loss of consciousness, fall, convulsions, muscle rigidity
2. Absence	Brief loss of consciousness and staring
3. Myoclonic	Sporadic (isolated), jerking movements
4. Clonic	Repetitive, jerking movements
5. Tonic	Muscle stiffness, rigidity
6. Atonic	Loss of muscle tone

Partial Seizures – Produced by a small area of the brain	Symptoms
1. Simple (awareness is retained) a. Partial Motor b. Sensory c. Autonomic d. Psychological	a. Jerking, muscle rigidity, spasms, head-turning b. Unusual sensations affecting either the vision, hearing, smell, taste or touch) c. Stomach sensation d. Memory or emotional disturbances
2. Complex (Impairment of awareness)	Automatisms such as lip smacking, chewing, fidgeting, walking and other repetitive involuntary movements
3. Partial seizure that becomes generalized seizure	Begins as partial (simple or complex) and evolves into grand-mal seizure

Pathophysiology:

If we take a look at any neuron in the brain, well find out two types of neurons acting on its to control it’s function. The first one is called as excitatory neuron that when fires (activetes) active the neighbouring nerves cells & while the second is called as inhibitory neurons & when it fires (activates) it stops those neurons from working

and these two different types of neurons work together in a balanced mannar to coordinate the work of other nerve cells. Neurons in the brain communicate with each other through chemical knows as neurotransmitter so excitatory neurotransmitter as glutamate while the inhibitory neurotransmitter as GABA & anti epileptic drug

and herbal drug show action inon acting on this receptor.

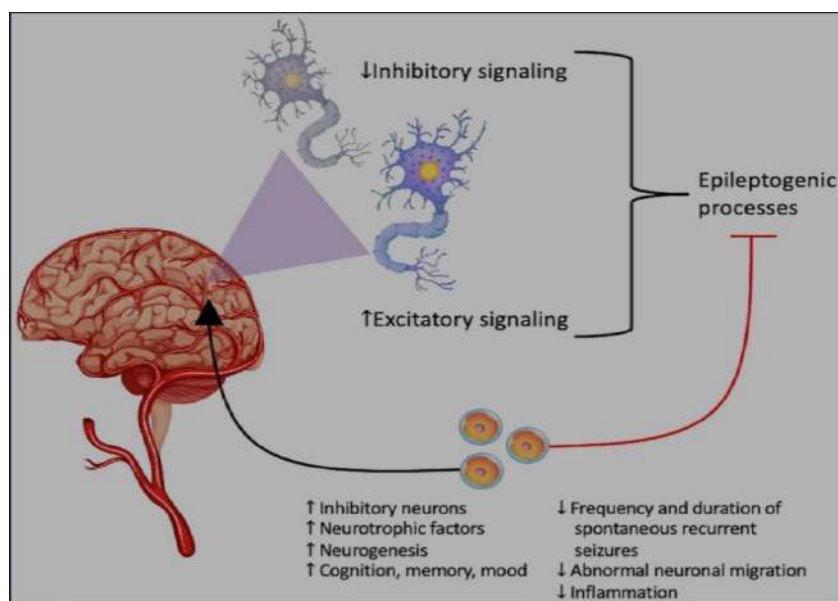


Figure 2 : Pathophysiology of epilepsy.

Sign & symptoms:

1. Genetic:

Childhood absence epilepsy, Juvenile absence & juvenile myoclonic epilepsy, Dravet syndrome.

2. Structural:

Stroke, Tumor, Alzheimer disease, Head trauma, Vascular malformation, Neural development lesions.

3. Immune:

Anti – NMDA Receptor encephalitis. Autoimmune ecephalitis.

4. Metabolic:

Hyperthermia, hyperglycaemia, hypocalcaemia, mitochondrial disease.

5. Infection :

Neurocysticercosis, Human immunodeficiency virus (HIV) , Cerebral toxoplasmosis, tuberculosis, cytomegalo virus.

SCENARIO :

1. Worldwide there are an estimated at least 65 million people living with epilepsy(4)& 2.2 million people in the United States (8)
2. In low & middle income countries, estimates of the corresponding rate are generally higher (6)(4)& (5).

3. According to WHO (World health organization) is estimated India about 1% of population .(2).

SOCIAL & ECONOMIC IMPACT :

Patients with epilepsy had significantly higher rates of health-related contacts and medication use and a higher socioeconomic cost, lower employment rates, and income compared with control subjects. These effects were identified up to 8 years before diagnosis.

OBJECTIVE :

1. In this article focus on broad concept I e. pathophysiology, ,types and herbal drug which is mostly use in epilepsy .
2. The main goal of article to give complete information about epilepsy and herbal drugs.
3. This kalpa provide anticonvulsant properties, neuroprotective property, stress and anxiety reduction, improved sleep quality & anti – inflammatory effect .

ADVANTAGES OF KALPA :

1. Reduce the seizure.
2. Stress reduction.
3. Improve cognitive function.

4. Neuroprotective effect.
5. Cardiovascular health.
6. Hormonal balance.
7. Antioxidant & anti – inflammatory effect.
8. Blood pressure regulation.
9. Digestive health..

PLANT PROFILE :

1. Ashwagandha :

Synonyms:

Indian ginseng, Winter cherry, ajagandh, kanase etc.

Botanical Name :

Withania Somnifera.



Figure 3 : Ashwagandha.

Biological Sources :

Ashwagandha consists of the dried mature roots of Withania Somnifera Dunal.

Family:

Solanaceae.

Geographical Source:

South Africa , Egypt, Congo , Pakistan, in India it is a found in M.P. , U.P. , Panjab, Gujrat and Rajsthan.

Chemical Constituents:

Pyrazole alkaloids: With a somnine, uschohygrine, anahygrine, anaferine; steroidal . Lactone: Withanolides.

Uses :

1. Reduce anxiety.
2. Diabetes.
3. Boost fertility.
4. Improve brain function.
5. Lowers stress.
6. Improve memory.

7. Uses in Insomnia.

2. Brahmi:

Synonyms:

water hyssop ,Indian Pennywort , Kapotvadka ,Somvalli & Saraswati etc .

Botanical Name:

Bacopa Monnieri.



Figure 4 : Brahmi

Biological Sources:

Brahmi is the fresh or dried herb of Centella asiatica (L.) (syn. Hydrocotyl asiatica Linn.).

Family:

Umbelliferae.

Geographical Source:

Native to the wetlands of southern and Eastern India, Australia, Europe, Africa, Asia, and North and South America.

Chemical Constituents:

Hersaponin, apigenin, D-mannitol, monnierasides I-III, plantainoside B and cucurbitacin; the alkaloids brahmine, herpestine and nicotine.

Uses:

1. In Ayurvedic medicine, brahmi ,has been used as a solution for seizures.
2. Managae the symptoms of anxiety .
3. Reduce stress
4. Memory booster.
5. Reduces blood pressure.
6. Treatment of Insomnia.
7. Cures urinary problems.

3. Sarpagandha :

Synonyms:

Indian snakeroot, Rauwolfia serpentina, snakeroot, snakewood, serpentine, Racine de Serpent, Raudixin, Nakuli, nakuleshta, bhujangakshi, gandanakuli, sarpangi, suarasa, mukta, dhavalavitapa, chandramara etc .

Botanical Name

Rauwolfia serpentina Benth. Ex Kurz.



Figure 4 : Sarpagandha .

Biological Source :

It consist of the dried rhizome and roots of Rauwolfia serpentine.

Family :

Apocynaceae.

Geographical sources :

It is also found in India Burma, Thailand, Philippines, Vietnam, Indonesia, Malaysia, Pakistan and Java. In India it occurs in the sub-Himalayan, Assam, especially in Dehradun, Siwalik range, Rohelkhand, Gorakhpur ascending to 1,300 m, east and west ghats of Tamil Nadu, in Bihar (Patna and Bhagalpur), Konkan, Karnataka and Bengal.

Chemical Constituent :

Ajmalicine, ajmalicine, reserpine, sargagine, serpentine, serpentinine, ajamline, rauwolfinine, serpinine etc.

Uses :

1. Relieve from depression.
2. Use in Insomnia.
3. Production of sleep – inducing .
4. Blood pressure – lowering drugs .
5. Improve digestion.

4. Vacha :

Synonyms :

Calamus, sweet calomel, sweet flag, sweet sedge, myrtle flag, Haimavati, Sadgrantha, Bach, Vekhand, etc.

Botanical Name :

Acorus calamus Linn. (Acoraceae).



Figure 5 : Vacha.

Biological Sources:

Calamus consists of dried rhizomes of Acorus calamus Linn.

Family :

Araceae

Geographical source :

Marshy tracts of Kashmir, Sirmaur (Himachal Pradesh), Manipur and the Naga hills. It is regularly cultivated in Koratagere Taluk in Karnataka and other parts of India.

Chemical Constituents :

Acolamone, acorenone, acoragermacrone, acoramone, acorone, calacone, calcorene, calamine, calamenol, calamone, calamenone, calarene etc

Uses :

1. It is extensively used in the management of epilepsy in the ancient texts.
2. Neuroprotective.
3. Reduces inflammation.
4. Antioxidant.
5. It improves your memory.
6. Nervine stimulant.
7. Anticonvulsant .

5. Jatamansi:

Synonyms :

Tapasvini, nalada, pista, mura, jata, vilomasha, butajata, mansi, Spikenard etc.

Botanical Name :

Nardostachys jatamansi.



Figure 6: Jatamansi

6. Jatamansi

Biological Sources:

It consists of dried Rhizome, stolons and roots of Valeriana wallichii DC.

Family :

Valerianaceae.

Geographical Source:

found abundant in Himalayas, Afghanistan and Pakistan.

Chemical Constituents :

Sesquiterpenoids, Monoterpenes, Alkaloids, Flavonoids, Glycosides, Triterpenoids, Coumarins etc.

Uses :

1. Helps to balance all the three doshas & reduces the episodes of seizures.
2. Boosting memory.
3. Treat Insomnia.
4. Manage blood pressure.
5. Nerve relaxing smell
6. Enhance nervous function.

7. Arjuna :

Synonyms:

Dhananjaya, Kaakubha, Kakubha, Aartagala, Indravriksha, Paartha, Virataru, Viravriksha.

Botanical Name:

Terminalia arjuna (Roxb.) W. & A



Figure 7 : Arjuna

Biological Source:

Arjuna consists of dried stem bark of the plant known as Terminalia arjuna Rob.

Family:

Combretaceae.

Geographical Source :

Arjuna usually refers to the bark of the Terminalia arjuna tree, native to India.

Chemical constituent :

Polyphenols, flavonoids, tannins, triterpenoids, saponins, sterols and minerals are the major constituents of T. arjuna

Uses :

1. Anti – inflammatory effects.
2. Antioxidant properties.
3. Cardiovascular health.
4. Wound healing.
5. Liver support.
6. Respiratory health.
7. Diuretic action.

8. Shatavari :

Synonyms :

Satavri, shatamuli, bhusuta, vari, narayani, shatapadi, pivari, indivari, bhiru, shatvirya etc .

Botanical Name:

Asparagus racemosus Willd.



Figure 8: Shatavari

Biological Source :

It consists of dried roots and leaves of plant.

Family:

Liliaceae.

Geographical Source :

West Bengal and south and central India.

Chemical constitutes :

steroidal saponins known as shatavarins, oligosaccharides, mucilage, isoflavones, alkaloids, flavonoids like rutin and quercetin and sterols such as sitosterols.

Uses :

1. Used in treatment of epilepsy.
2. Manage anxiety.
3. Use in alcohol withdrawal.
4. Used to attempt to treat conditions related to hormone imbalance such as polycystic ovarian syndrome (PCOS) and infertility.
5. Support immune system.
6. Improve digestion issues.
7. Support female reproductive system.
8. Promotes fertility.
9. Helps to regulate menstrual cycle.

EXTRACTION METHOD:

Extraction is the first step to separate the desired natural products from the raw materials . There are num.of extraction method are available for separation of desired product form material. So here Maceration extraction method are use .

Maceration :

The maceration method is a simple extraction technique where the drug substance is soaked in a solvent (usually alcohol or water) to extract its active compounds.

Procedure :

1. 5 gm powder of Ashwagandha, Sarpagandha, Brahmi, Vacha, Jatamansi, Arjuna & Shatavari taken and weigh accurately.

2. Then each powder mix in 25 ml water & stand for 48 hr with frequent agitation, until soluble matter is dissolved.
3. After 48 hrs & filter with Whatman no .1 filter paper.
4. Collect the filtrate.



Figure 9 : Extraction Of Herbal drugs.

PHYTOCHEMICAL SCREENING:

A. Identification test of alkaloids for : Ashwagandha, Jatamansi, Shatavari.

Sr. No.	Test	Observation	Result	Inference
1	Dragendroffs Reagent: 5 ml extract of Ashwagandha, Jatamansi, Shatavari + 2-3 drop of dragendroffs Reagent (Potassium Bismuth).	Organish red Colour	Alkaloids present	+
2	Mayer's Reagent: 5 ml extract of Ashwagandha, Jatamansi, Shatavari + 2 – 3 drop of Mayer's reagent (Potassium mercuric iodide).	Cream ppt.	Alkaloids present	+

3	Wagner's reagent : 5 ml extract of Ashwagandha, Jatamansi, Shatavari + 2 – 3 drops of wagner's reagent + 1ml HCL.	Reddish brown.	Alkaloids present	+
4	Tannic acid : 5 ml extract + 2-3 drops of tannic acid.	Turbid ppt.	Alkaloids present	+



Figure 10 : Phytochemical Screening of herbal drugs.

B) Identification test of Terpenoids for : Sarpagandha, Brahmi, Vacha & Arjuna.

Sr. No	Test	Observation	Result	Inference
1	Salkowski test : 5 ml extract of Sarpagandha, Brahmi, vacha & Arjuna + conc. sulphuric acid .	Reddish brown coloration at the junction of two layers.	Terpenoids present	+
2	Liebermann test : 3ml extract + 3 ml acetic acid anhydride + heat & cool + drop of conc. Sulphuric acid .	Blue colour.	Terpenoids present.	+
3	Liebermann – Burchard Test : 3 ml extract + 2 ml chloroform + 1 ml acetic anhydride + one drop concentrated sulphuric acid	Blue – green to red orange colour.	Terpenoids present	+



Figure 11: Phytochemical Screening of herbal drugs

MATERIAL:

Sr. No	Material	F1	F2
1	Ashwagandha	12.5g	12.5 g
2	Sarpagandha	12g	12g
3	Brahmi	7 g	7 g
4	Vacha	4 g	4 g
5	Jatamansi	1g	1g
6	Shatavari	1.5 g	1.5g
7	Arjuna	1g	1g
8	Cardamom	1 g	1g
9	Sweeting agent	Sugar: 7g	Jaggery: 7 gm.
10	Water	5ml	5 ml

METHOD :

1. All herbs powder are weigh accurately.
2. Sugar / jaggery are dissolved in water at 70 °C
3. Then ashwagandha and remaining all powder are added in water & stirr well to avoid lump formation.
4. After some minutes then add cardamom powder & mix well .
5. Turn the heat off.
6. Dry this mixture & pass through 120 nu.mesh.
7. Dry the granules in hot air oven at 100 ° C for 15 min.
8. Store in tightly closed container.



Figure 12: Picture Of procedure.

EVALUATION PARAMETERS:

1. Colour

Brown colour .

2. Odour:

Warm, sweet, and slightly spicy due to addition of cardamom powder.

3. Test :

Sweet.

4. pH :

1 gm of ashwagandha Kalpa is dissolved in 20 ml of distilled water & stand for it 2 hrs .after then filter it .Take filtrate and check the pH by using pH meter.

5. Loss of drying :

Loss on drying (LOD) is a common technique used to determine the moisture content of a substance by measuring the weight loss after drying. The formula for calculating loss on drying is:

$$\text{LOD} = \frac{\{\text{Initial weight}\} - \{\text{Final weight}\}}{\text{Initial weight}} \times 100$$

6. Ash value :

Ash value is a measure of the total amount of inorganic material present in a sample after it has been completely burned off. It's often used in the pharmaceutical and food industries to determine the purity of herbal drugs and organic substances. The formula for calculating ash value is:

$$\text{Ash value} = \frac{\text{Weight of ash}}{\text{Weight of sample}} \times 100$$

FUTURE SCOPE :

1. Nutraceutical.
2. Health and wellness Industry
3. Use as anxiety reducer.
4. The pharmaceutical industry might explore the therapeutical potential of such formulations for specific health conditions.

EXPECTED OUTCOME:

This Ashwagandha Kalpa, which contains Sarpagandha, Brahmi, Vacha, Jatamansi, Arjuna, and Shatavari, could vary depending on individual health conditions and purposes. However, generally, it's often used to promote

overall well-being, reduce seizure, reduce stress, enhance cognitive function, support heart health, and boost immunity. Each of these herbs has its own unique benefits, and together they may synergistically contribute to these outcomes.

RESULT:

Sr. No	Parameter	F1	F2
1	Colour	Brown	Brown
2	Test	Sweet & slightly spicy.	Sweet & slightly spicy.
3	Odour	Warm , sweet & slightly spicy .	Warm, sweet & slightly spicy.
4	pH	5.3 pH	5.5 pH
5	Loss of drying	0.315 g	0.310g
6	Ash value	0.199g	0.186g

CONCLUSION:

The rate of epilepsy in India as well as worldwide is large & challenging. Great efforts & knowledge about epilepsy & Seizure is necessary to control. This herbal formulations have safe & effective to use & Also it reduced anxiety, improve heart problems, boost immunity, improve digestion, improve memory so it is safe to use .

SUMMARY:

In this research paper I formulate Ashwagandha kalpa which contains Sarpagandha, Brahmi, Vacha, Arjuna, Shatavari and Cardamom. Firstly I select the herbs form different paper then some the Phytochemical Screening and check the quality of herbs. Then two formulation of kalpa preped in first formulation sugar used as sweetening agent but there is problem because patient which have diabetes they can't consume it then in second batch Jagger add so they can also consume it .Then evaluation of kalpa was done.

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