

# International Journal of Pharmaceutical Sciences and Drug Research

## 2015; 7(5): 376-383



Review Article

ISSN: 0975-248X  
CODEN (USA): IJPSPP

### A Review on “Kapa Sura Kudineer”-A Siddha Formulary Prediction for Swine Flu

Thillaivanan. S<sup>1\*</sup>, Parthiban. P<sup>2</sup>, Kanakavalli. K<sup>3</sup>, Sathiyarajeshwaran. P<sup>4</sup>

<sup>1</sup>Department of Indian Medicine & Homeopathy, Tamil Nadu Medical Service, Tamil Nadu, India

<sup>2</sup>Govt Siddha Medical College, Department of PG Maruthuvam, The Tamil Nadu Dr. MGR Medical University, Chennai, Tamil Nadu, India

<sup>3</sup>Govt Siddha Medical College, Department of UG Maruthuvam, The Tamil Nadu Dr. MGR Medical University, Chennai, Tamil Nadu, India

<sup>4</sup>Siddha Central Research Institute, Central Council for Research in Siddha, Chennai, Tamil Nadu, India

#### ABSTRACT

Siddha medicine is one of the oldest medical systems in the world. This system is most commonly practicing in India especially in southern regions. Siddha medicines become popular nowadays because of various outbreaks of communicable and very infectious diseases like chikungunya, dengue, swine flu etc. These diseases of viral origin are very challenge to the modern world because of lack of ideal anti-viral therapy. Pandemic flu is different from ordinary flu because it's a new flu virus that appears in humans and spreads very quickly from person to person worldwide. Because it's a new virus, no one will have immunity to it and everyone could be at risk of catching it. This includes healthy adults as well as older people, young children and those with existing medical conditions. The polyherbal decoction Kapa Sura Kudineer (KSK) is a well-known one in this series next to Nilavembu kudineer (NVK). This KSK is introduced for the prevention and the management of Swine flu. And the people of Tamil Nadu are very attentive about this Siddha drug KSK because to prevent and protect from the deadly life threatening disease, Swine flu. Here, an attempt has been made to review the explored ethno pharmacological activities of the ingredients of KSK to strengthen the scientific facts favoring this formulation.

**Keywords:** Herbal Medicine, Nilavembu, Indian system of Medicine, Kapa suram.

#### INTRODUCTION

The World health Organization (WHO) estimated that 80% of the populations of developing countries rely on traditional medicines, mostly plant drugs for their primary health care needs. [1] The most important of these biologically active constituents of plants are

alkaloids, flavonoids, tannins and phenolic compounds. [2] Mortality rate in some of dreadful viral fevers like Dengue, Chikungunya and Swine flu have been increased which creates panic among the people. Many dreadful viral fevers have been reported recently in India and other Asian countries Swine flu is an emerging viral infection that is a present global public health problem. There are thousand cases of swine flu in the present day. Due to the nature of respiratory virus, the transmission of this pathogenic virus is air borne transmission. Hence, the rapid spreading and difficulty in control of this infection can be expected. [3]

**\*Corresponding author: Dr. S Thillaivanan,**

Department of Indian Medicine & Homeopathy, Tamil Nadu Medical Service, Tamil Nadu, India;

**E-mail:** drthillai.mdsiddha@gmail.com

**Received:** 11 July, 2015; **Accepted:** 30 July, 2015

Table I: Ingredients of KSK with literature review

| S. No | Ingredients [11]                                    | Part used [12] | Actions [12]   | Indications as per literature [12]  |
|-------|---|----------------|--|---|
| 1.    | <i>Zingiber officinale</i> / <b>Chukku</b>          | Rhizome        | stimulant, stomachic, carminative                    | Dyspepsia, Heartburns, Flatus, Cough, asthma, diarrhea, sinusitis, Peptic Ulcer, Anemia, Fever  |
| 2.    | <i>Piper longum</i> / <b>Thippili</b>               | fruit          | stimulant, stomachic, carminative                    | Cough, asthma, anemia, aguesia, headache, sinusitis, throat infection, phlegm                   |
| 3.    | <i>Syzygium aromaticum</i> / <b>Kirambu</b>         | fruit          | stomachic, carminative, Antispasmodic                | vomiting, syncope, diarrhea, dysentery, ear problems, sinusitis, headache, dyspepsia            |
| 4.    | <i>Anacyclus pyrethrum</i> / <b>Akkirakaram</b>     | Root           | Stimulant, sialogogue, rubifacient.                  | dental problem, tonsillitis, arthritis, epilepsy, fever, dryness of tongue                      |
| 5.    | <i>Tragus involucrate</i> / <b>Sirukanchori ver</b> | Root           | Diaphoretic, anti-pyretic                            | Skin diseases, itching, fever, thirst, asthma, eczema, and cough                                |
| 6.    | <i>Hygrophila auriculata</i> / <b>Neermulli ver</b> | Root           | Diuretic, refrigerant, demulcent, tonic              | Anemia, sinusitis, edema, UTI   |
| 7.    | <i>Terminalia chebula</i> / <b>Kadukkai</b>         | fruit          | digestive, laxative, tonic, alterative               | liver diseases, stomatitis, diabetes, jaundice, leucorrhoea, vitiligo, vomiting, piles, fistula |
| 8.    | <i>Justicia adathoda</i> / <b>Adathodai</b>         | leaves         | Anti spasmodic, expectorant, diuretic, germicide     | Fever, cough, asthma, throat infection, purpura, Bleeding dysentery                             |
| 9.    | <i>Anisochilus carnosus</i> / <b>Karpooravalli</b>  | leaves         | stimulant, diaphoretic, expectorant                  | Cough pox, phlegm, sinusitis, and rhinitis.   |
| 10.   | <i>Costus speciosus</i> / <b>Koshtam</b>            | Root           | expectorant, tonic, diaphoretic                      | Fever, Asthma, Piles, Wounds, Mania, Abscess  |
| 11.   | <i>Tinospora cordifolia</i> / <b>Seendhil</b>       | Root           | Alterative, stimulant, demulcent, Antiperiodic       | Fever, Diabetes, Skin diseases, Diarrhea, hypertension, purpura                                 |
| 12.   | <i>clerodendrum serratum</i> / <b>Siruthekku</b>    | Root           | stimulant, sedative                                  | Fever, Asthma, sinusitis, Myalgia, Tridosha   |
| 13.   | <i>Andrographis paniculata</i> / <b>Nilavembu</b>   | Stem, Leaves   | Stimulant, tonic, alterative, stimulant              | All types of Fever, sinusitis, syncope, Arthritis   |
| 14.   | <i>Cyperus rotundus</i> / <b>Koraikizhangu</b>      | Root tuber     | Astringent, stimulant, tonic, demulcent, diaphoretic | All types of fever, thirst, Hypertension, Tridosha  |
| 15.   | <i>Sida acuta</i> / <b>Vattathiruppi Ver</b>        | Root           | Tonic, Expectorant Demulcent, diaphoretic            | fever, otalgia, itching, diarrhea, scabies, arthritis   |



Fig. 1: Photographs of the ingredients of Kapa Sura Kudineer (KSK)

In Siddha clinical practice *Nilavembu Kudineer* (NVK) a decoction based polyherbal Siddha formulation is prescribed for *suram* (fever) of unknown origin (PUO). It is used as first line therapy and general remedy for some types of fever caused by unidentified microbial infections. Like that "*Kapa sura Kudineer*" has taken the main role in the prevention of swine flu nowadays in a

popular manner. The drug KSK has been quoted for *kapasuram*, the symptoms of which is an analogue with swine flu, mentioned in Siddha Formulary of India. The aim and objective of this article is to reveal the scientific records of the ingredients of "*Kapa sura Kudineer*" which may be helpful for scientist, researchers, and practitioners.

#### Swine flu (swine influenza)

It is a respiratory disease caused by viruses (influenza viruses) that infect the respiratory tract of pigs and result in nasal secretions, a barking-like cough, decreased appetite and listless behavior. [4]

#### Main symptoms of swine flu in humans [5]

Direct transmission of a swine flu virus from pigs to humans is occasionally possible (called zoonotic swine flu). In all, 50 cases are known to have occurred since the first report in medical literature in 1958, which have resulted in a total of six deaths. Of these six people, one was pregnant, one had leukemia, one had Hodgkin disease and two were known to be previously healthy. Despite these apparently low numbers of infections, the true rate of infection may be higher, since most cases only cause a very mild disease, and will probably never be reported or diagnosed. According to the Centers for Disease Control and Prevention (CDC), in humans the symptoms of the 2009 "swine flu" H<sub>1</sub>N<sub>1</sub> virus are similar to those of influenza and of influenza-like illness in general.

#### Typical Symptoms [6]

Symptoms include fever, cough, sore throat, body aches, headache, chills and fatigue. The 2009 outbreak has shown an increased percentage of patients

reporting diarrhea and vomiting. The 2009 H<sub>1</sub>N<sub>1</sub> virus is not zoonotic swine flu, as it is not transmitted from pigs to humans, but from person to person.

### Diagnosis

For diagnosis of "swine influenza- A" infection, respiratory specimen (nasopharyngeal swab, throat swab nasal aspirate, nasal washing) would generally need to be collected within the first 4 to 5 days of illness (when an infected person is most likely to be shedding virus).<sup>[3]</sup>

Most of the tests can distinguish between A and B types. The test can be negative (no H<sub>1</sub>N<sub>1</sub> infection) or positive for type A and B. If the test is positive for type B, the flu is not likely to be swine influenza (H<sub>1</sub>N<sub>1</sub>). If it is positive for type A, the person could have conventional influenza strain or swine influenza (H<sub>1</sub>N<sub>1</sub>).<sup>[7]</sup>

**TABLE II: Ethno pharmacological aspects of the ingredients of KSK**

| S. No | Botanical name <sup>[11]</sup> | Family <sup>[11]</sup> | Morphology & Habitat   | Phytochemical constituents <sup>[12-26]</sup>  |
|-------|--------------------------------|------------------------|--|--|
| 1.    | <i>Zingiber officinale</i>     | Zingiberaceae          | Herbaceous, perennial  | beta-sitosterol palmitate, isovanillin, glycol monopalmitate, hexacosanoic acid 2,3-dihydroxypropyl ester, adenine, gingerol, shogaol <sup>[12]</sup>  |
| 2.    | <i>Piper longum</i>            | Piperaceae             | Aromatic climber, perennial woody root                                   | Coumapherine, piperidine, piperolactam A, piperidine, turmerone, aphanamol, bisdemethoxycurcumin, demethoxycurcumin <sup>[13]</sup>  |
| 3.    | <i>Syzygium aromaticum</i>     | Myrtaceae              | Evergreen trees and shrubs   | phenylpropanoids such as carvacrol, thymol, eugenol, cinnamaldehyde <sup>[14]</sup>  |
| 4.    | <i>Anacyclus pyrethrum</i>     | Asteraceae             | Perennial herb much like chamomile in habitat                            | anacycline, pellitorine, enetriyne alcohol, hydrocarolin, inulin (c 50%), traces of volatile oil and (+) - sesamin, amides (I, II, III, IV) <sup>[15]</sup>  |
| 5.    | <i>Tragia involucreta</i>      | Euphorbiaceae          | Slender, twining herb with stinging hairs                                | Alkaloids, flavonoids, lipids, phenolic compounds, proteins, saponins and triterpenoids <sup>[16]</sup>  |
| 6.    | <i>Hygrophila auriculata</i>   | Acanthaceae            | An aquatic, perennial herb   | phytosterols, tannins, carbohydrates, flavonoids, terpenoids, and sterols, lupeol, betulin, and stigmaterol <sup>[17]</sup>  |
| 7.    | <i>Terminalia chebula</i>      | Combretaceae           | Tree with a diameter of 1.5 to 2.5 m.                                    | tannins -gallic acid, chebulagic acid, punicalagin, chebulanin, corilagin, neochebulinic acid, ellagic acid, chebulinic acid, casuarinin, terchebulin, polyphenols such as corilagin, galloyl glucose, punicalagin, terflavin A, maslinic acid. Flavonol, glycosides, triterpenoids, coumarin conjugated with gallic acids called chebulin as well as other phenolic compounds <sup>[18]</sup> |
| 8.    | <i>Justicia adathoda</i>       | Acanthaceae            | Evergreen, much-branched perennial shrub with a strong, unpleasant odour | Alkaloids, lignans, flavonoids, and terpenoid, steroids-campesterol, stigmaterol, sitosterol, and sitosterol-D-glucoside <sup>[19]</sup>   |
| 9.    | <i>Anisochilus carnosus</i>    | Lamiaceae              | Tender fleshy perennial plant, oregano-like flavor and odor.             | 94.3% of the essential oil. Carvacrol (27.9%), camphor (14.1%) and <i>a-cis</i> -bergamotene (10.2%) <sup>[20]</sup>   |
| 10.   | <i>Costus speciosus</i>        | Costaceae              | Rhizome tuberous, 1-2 cm thick, highly branched, yellowish-green inside  | diosgenin, prosapogenin B of dioscin, diosgenone, cycloartanol, 25-en-cycloartenol and octacosanoic acid <sup>[21]</sup>   |
| 11.   | <i>Tinospora cordifolia</i>    | Menispermaceae         | Glabrous climbing shrub with a succulent stem and papery bark            | Berberine, Palmatine, Tembetarine, Magnofl orine, Tinocordifolin, Octacosanol, Heptacosanol, Furanolactone, Tinocordifolioside, Cordioside, Cordifolioside A, Cordifolioside B <sup>[22]</sup>   |
| 12.   | <i>Clerodendrum serratum</i>   | Verbanaceae            | small trees, shrubs & sub herbaceous perennial                           | Serratin along with lupeol <sup>[23]</sup>   |
| 13.   | <i>Andrographis paniculata</i> | Acanthaceae            | Erect annual herb extremely bitter in taste                              | Andrographolide (C <sub>20</sub> H <sub>30</sub> O <sub>5</sub> ) is the major diterpenoid. Other diterpenoids are deoxyandrographolide, neoandrographolide, 14-deoxy-11, 12-didehydroandrographide and isoandrographolide, over 20 diterpenoids and over 10 flavonoids <sup>[24]</sup>  |
| 14.   | <i>Cyperus rotundus</i>        | Cyperaceae             | Perennial plant  | cyprotene, acopaene, cyperene, aselinene, rotundene, valencene, cyperol, gurjunene, trans-calamenene, dcadinene, gcalacorene, cadalene, amurolene, gmurolene, cyperotundone, mustakone, isocyperol, acyprone, 4,11-selinnadien-3-one and 1,8-cineole <sup>[25]</sup>   |
| 15.   | <i>Sida acuta</i>              | Malvaceae              | Long-lived (i.e. perennial) herbaceous plant or small shrub              | Beta-phenethylamines, quinazolines and carboxylated tryptamines, in addition to choline and betaine combination of sympathomimetic amines and vasicinone <sup>[26]</sup>   |

### Conventional Treatment

**Neuraminidase inhibitor antiviral medications:** Oseltamivir (Tamiflu), a prodrug that is hydrolyzed by the liver to its active metabolite, oseltamivir carboxylate, with an elimination half-life of about 6–10 h. and Zanamivir (Relenza) is given as inhalational or administered orally. These medications target the early phase of the infection. However, this strain is resistant to adamantanes, such as Amantadine and Rimantadine. The potential, resistant and having different adverse reactions like cough, diarrhoea, dizziness, headache, nausea, sinus inflammation, sore throat, stuffy nose, vomiting. Bronchospasm are the major problem of these drugs.<sup>[8-9]</sup>

Table III: Some Related Pharmacological studies of the ingredients of KSK in the management of Swine Flu.

| S. No | Botanical name                 | Pharmacological studies carried out  |
|-------|--------------------------------|--|
| 1     | <i>Zingiber officinale</i>     | Anti-cancer effects [27], Anti-inflammatory effects [28], Antitumor promoting activities of selected pungent phenol substances present in ginger [29], Antiemetic effect of ginger [30], Anti-influenza agents have been isolated from <i>Z. officinale</i> . TNF- $\alpha$ , reported as anti-influenza cytokine [31], Antimicrobial Activities of <i>M. avium</i> and <i>M. tuberculosis</i> in Vitro [32], Ameliorating effect [33], Anti-arthritic activity [34], Antitussive Effects [35]<br>Antiasthmatic activity [36], anti-inflammatory activity against carrageenan induced paw edema [37], antihyperglycemic and antilipidperoxidative effects in alloxan induced diabetic rats [38], Hypochoesterolaemic activity in rats with high cholesterol fed diet [39], Analgesic activity using rat tail-flick method and for NSAID type analgesia using acetic-acid writhing method [40], Antioxidant activity [41], Antiamoebic activity against <i>Entamoeba histolytica</i> [42], Immunomodulatory activity [43], anti-metastasis activity [44], Hepatoprotective activity induced by carbon tetrachloride [45], Antimicrobial activity [46] |
| 2     | <i>Piper longum</i>            | Anti-pyretic effect [47], Antioxidant properties [48], antiviral activity against <i>Herpes Simplex virus</i> [49], germicidal effect against various bacteria [50], Anti-stress activity in cold restraint induced gastric ulcers [51], Anti-diabetic activity [52]   |
| 3     | <i>Syzygium aromaticum</i>     | Anticonvulsant and Myorelaxation activity [53], Antidepressant activity [54], Immunostimulating effect [55], Memory-enhancing activity [56], Insecticidal and molluscicidal effect [57], Local anaesthetic effect <i>in vivo</i> [58], Antimicrobial effect [59], Inhibitory effect on 5-lipoxygenase & cyclooxygenase [60]  |
| 4     | <i>Anacyclus pyrethrum</i>     | Cytotoxic activity [61], Analgesic activity using rat tail-flick method [62], Anti-inflammatory activity in carrageenan induced rat paw edema [63], Anti-diabetic activity [64], Anti-tumor activity [65], Bronchodilator activity [66]<br>Anti-inflammatory, Antipyretic activity on Brewer's yeast-induced pyrexia in rats [67], Antibacterial and antihelminthic activity [68], Antitumor activity in Ehrlich Ascites carcinoma (EAC) - and sarcoma-180 (S-180)-bearing mice [69], Analgesic activity in hot plate and tail flick by thermal method and acetic acid-induced writhing test [70], Hepatoprotective activity in CCl <sub>4</sub> -induced liver damage [71], hypoglycemic activity streptozotocin-induced diabetic rats [72], <i>In vitro</i> and <i>in vivo</i> antioxidant activities [73], Hematopoietic activity using cyclophosphamide-induced anemia in rats [74]  |
| 5     | <i>Tragia involucrata</i>      | Anti hyperglycemic effect [75], anti salmonellae activities <i>in vitro</i> and <i>in vivo</i> [76], Anti lithiatric activity [77], Bactericidal Activity [78], Inhibition of HIV 1 integrase activity [79], Hepatoprotective activity [80], Antiviral activity and their protective activity against cytotoxic effects caused by influenza A virus [81], Antidiabetic and renoprotective activity [82], Hypo lipidemic activity In atherogenic diet induced hyperlipidemic models [83], Antinociceptive activity [84], Anti-Ulcer activity in aspirin and ethanol-induced ulcer models [85]   |
| 6     | <i>Hygrophila auriculata</i>   | Anti-inflammatory activity by the modified hen's egg chorioallantoic membrane test [86], Bronchodilatory activity both <i>in vitro</i> and <i>in vivo</i> [87], antibacterial activity against <i>Staphylococcus aureus</i> and <i>Escherichia coli</i> [88], antitussive activity in anaesthetized rabbits [89], Hepatoprotective activity against D-galactosamine induced liver damage [90]  |
| 7     | <i>Terminalia chebula</i>      | Hepato protective activity, Analgesic, Antipyretic [91], Anti-Ulcer activity in pyloric ligated rats [92], Anti-microbial activity [93]  |
| 8     | <i>Justicia adathoda</i>       | Analgesic effect in acetic acid induced writhing and Eddy's hot plate models, Anti-inflammatory activity against carrageenan induced paw edema, Antipyretic activity by Brewer's yeast-induced pyrexia in rats [94], Antifungal Activity [95], Antidiabetic activity [96], Antihelminthic Activity [97], Anticholinesterase activity was shown by observation on frog rectus muscle and dog blood pressure. [98], Antibacterial [99], Free radical scavenging activity, antioxidant activity, nitric oxide scavenging activity, ion chelating activity [100], Antistress Activity [101]  |
| 9     | <i>Anisochilus carnosus</i>    | Antibacterial activity [102], Gastro intestinal and anti-ulcer activity [103], Hepatoprotective activity [104], Anti-neoplastic property [105], Immunomodulatory effect [106], Anti-hyperglycemic property [107], Anti-oxidant activity [108]  |
| 10    | <i>Costus speciosus</i>        | Antihistaminic activity, Antiasthmatic activity in sensitized isolated guinea pig lung [109], Hepatoprotective activity [110], Mast Cell Stabilization [111], Anti-allergic activity by milk induced leucocytosis in Albino mice, Anti-inflammatory activity in carrageenan induced paw edema and cotton pellet implantation methods [112], Anti-pyretic activity [113], Analgesic activity [114], Anti cancer activity [115]  |
| 11    | <i>Tinospora cordifolia</i>    | Anti-oxidant activity induced elevated lipid per oxidation [116], Anti cancer activity [117], Anti-hyperglycaemic effects [118], Anthelmintic activity against adult earth worms [119], Hepatoprotective activity CCl <sub>4</sub> -induced liver damage in rats [120], Anti-inflammatory activity in carrageenan induced paw edema [121], Activity of andrographolide and its derivatives against influenza virus <i>in vivo</i> and <i>in vitro</i> [122]  |
| 12    | <i>Clerodendrum serratum</i>   | Tranquilizing activity [123], Anti-inflammatory, anti-arthritic, analgesic, Anticonvulsant activity against strychnine and leptazol-induced convulsions in mice [124], Anti-emetic activity against apomorphine induced vomiting [125], Hepatoprotective activity in rats by inducing liver damage by carbon tetrachloride [126], Antibacterial activity in disc diffusion method [127], Cytoprotective effects against ethanol induced gastric damage [128], Antidiabetic activity in rats with alloxan induced diabetes [129], Antidiarrhoeal activity in castor oil induced diarrhoea in mice [130]   |
| 13    | <i>Andrographis paniculata</i> | Anti-inflammatory/Analgesic activity [131], Antulcer against aspirin plus pylorus ligation gastric ulcer, ethanol induced ulcer and water immersion stress induced ulcer in rats [132], Hypoglycemic activity with alloxan induced diabetic in rats [133], Hepatoprotective Effect against liver damage induced by paracetamol overdose [134], Antimalaria activity [135], Antipyretic activity [136], Antibacterial activities [137], Antioxidant activity [138-139]  |
| 14    | <i>Cyperus rotundus</i>        |  |
| 15    | <i>Sida acuta</i>              |  |

### Immunization by Vaccines

The U. S. Food and Drug Administration (FDA) approved the new swine flu vaccine for use in the United States on September 15, 2009. Studies by the National Institutes of Health (NIH) show that a single dose creates enough antibodies to protect against the virus within about 10 days. But unfortunately, this according to update reports in Reuters; eight hundred children in Europe have developed narcolepsy an

incurable sleep disorder after taking the swine flu vaccine Pandemrix H<sub>1</sub>N<sub>1</sub> vaccine which is made by GlaxoSmithKline.

### Swine Flu and Siddha Medicine

Siddha system of Medicine explains about 4448 diseases in its text quoted by the saint Agasthiyar. [10] All these diseases are caused due to alteration in three humors of body called Vatham, Pitham, and Kapham.

Siddha promotes the concept that if one's immune system (3 humors) is strong and normal then even if the body is exposed to any microorganism, one will not be affected. During a pandemic or an epidemic attacks, Siddha emphasizes on the resistance of people existing in regions affected by viruses. This medicine promotes the intake of decoctions to increase the immunity level of the people and to neutralize or normalize the 3 humors. Siddha remedies consist of natural herbs which are effective in preventing and controlling swine flu. Moreover, the herbs in the decoction or any other medications are used to relieve swine flu symptoms, and boost the immune system against the H<sub>1</sub>N<sub>1</sub> virus and to relieve from the symptoms. On this way, Siddha treatment for swine flu involves the use of Kapa Sura Kudineer which comprising 15 drugs explained in Table I.

### Ethno Pharmacological Aspects

The Phyto chemical constituents and pharmacological actions of the ingredients, explained in the Table II & III, indicates that most of the herbs are having anti inflammatory, Antipyretic, Analgesic, anti viral, anti bacterial, anti fungal, anti oxidant, Hepato protective, anti diabetic, anti-asthmatic, Anti-tussive, Immunomodulatory, anti-diarrheal and Anti-oxidant activities .

In the developing countries increased cost of medicine as well as their side effects has become a great task when the public health is concerned. Investigations have been carried out from time to time to develop different types of polyherbal formulations to enhance the overall therapeutic potential of the formulation<sup>[140]</sup>. And so, nowadays the traditional medical system and their herbal / herbo-mineral preparations are for various ailments becoming more popular. A lot of research articles confirm that these herbs possess effective anti-viral, anti-bacterial and commonly antimicrobial activity without causing any hepatic damage and renal damage to a certain extent like conventional drugs. When comparing with the ethno pharmacological aspects of these ingredients with Siddha literature strongly indicates that the KSK prepared out of these drugs can reveal Anti-viral, Anti allergic, Anti-asthmatic & antipyretic activity with Hepato- protective effect and serve as an excellent defensive as well as a healing one.

Based on this text survey the KSK can be used for preventative as well as curative for swine flu. In future more awareness must be given to the further research. This KSK formulation has not been studied for its synergistic pharmacological activities. It is the further need of time to complete pharmacological and clinical studies to protect people from the deadly disease swine flu.

### REFERENCES

1. Rajesh R, Chitra K, Paarakh PM. *In vitro* Anthelmintic Activity of Aerial Parts of *Aerva lanata* Linn Juss. International Journal of Pharmaceutical Sciences and Drug Research 2010; 2(4): 269-271.
2. Kiruba S, Mahesh M, Nisha SR, Miller Paul Z, Jeeva S. Phytochemical analysis of the flower extracts of *Rhododendron arboreum* Sm. ssp. nilagiricum (Zenker) Tagg. Asian Pacific Journal of Tropical Biomedicine 2011; 1: 278-280.
3. Sanap Mahesh D, Salunke Shantavan S, Borse LB, Pawar SP, Borse SL, Ahirrao RA. A Review on Swine Flu. Pharma Science Monitor 2015; 6(1):308-324.
4. Lokwani P, Kumar P, Upadhyay Y, Gupta S, Solanki R, Singh N. Swine Flu: An Overview. Journal of Applied Pharmaceutical Science 2011; 1 (4): 29-34.
5. Kothalawala H, Toussaint MJ, Gruys E. An overview of swine influenza. Vet Q. 2006; 28(2):46-53.
6. Parmar S, Shah N, Kasarwala M, Virpura M, Prajapati DD. A Review on Swine Flu. JPSBR. 2011; 1(1): 11-17.
7. Lade KS, Sawant SD, Singh MC. Review on Influenza with Special Emphasis on Swine Flu. Int J Curr Pharm Res. 2012; 3(1): 97-107.
8. Sharma PP, Roy RK, Anurag. Neuraminidase inhibitors: Oseltamivir, Peramivir, Synthesis and Profile. Journal of Pharmacy Research 2010; 3(7): 1602-1606.
9. Ali F, Mukit A, Sharma S, Bhaumik A. Herbal Prospects for Treatment of Swine Flu: A Review. Sch J App Med Sci. 2013; 1(1):16-19.
10. Shanmugavelu M. Siddha Maruthuva Noi Nadal Noi Mudhal Nadal Part-I. Directorate of Indian Medicine & Homeopathy; Chennai. 2006:359-363.
11. Murugesu mudaliyar KS. Siddha Materia Media (Medicinal Plants Division), 8<sup>th</sup> edition, Chennai: Directorate of Indian Medicine & Homeopathy. 2006; 7-713.
12. Bao L, Deng A, Li Z, Du G, Qin H. Chemical constituents from *Zingiber officinalis*. Zhongguo Zhong Yao Za Zhi. 2010; 35(5):598-601.
13. Liu W, Jiang Z, Chen J, Zhang X, Ma Y. Chemical constituents from *Piper longum*. Zhongguo Zhong Yao Za Zhi. 2009; 34(22):2891-4.
14. Chaieb K, Hajlaoui H, Zmantar T, Kahla-Nakbi AB, Rouabhia M, Mahdouani K, Bakhrouf A. The chemical composition and biological activity of clove essential oil, *Eugenia caryophyllata* (*Syzygium aromaticum* L. Myrtaceae): a short review. Phytother Res. 2007; 21(6):501-6.
15. Kumar VK, Lalitha KG. Pharmacognostical studies on the root of *Anacyclus pyrethrum* DC. Indian Journal of Natural Products and Resources 2012; 3(4):518-526.
16. Venkat Rao N, Benoy K, Hemamalini K, Shanta Kumar SM, Satyanarayana S. Pharmacological Evaluation of Root Extracts of *Tragia Involucrata*. Pharmacologyonline.2007; 2: 236-244.
17. Kshirsagar AD, Ingale KG, Vyawahare NS, Thorve VS. *Hygrophila spinosa*: A comprehensive review. Pharmacogn Rev. 2010; 4(8): 167-171.
18. Bag A, Bhattacharyya SK, Chattopadhyay RR. The development of *Terminalia chebula* Retz. (Combretaceae) in clinical research. Asian Pac J Trop Biomed. 2013; 3(3): 244-252.
19. Correa GM, Alcantara A. Chemical constituents and biological activities of species of *Justicia* - a review. Rev Bras Farmacogn. 2012; 22(1):220-238.
20. Senatore F, Lentini F, Venza F, Bruno M, Napolitano F. Composition and antibacterial activity of the essential oil of *Anisochilus carnosus* (Linn. fil.) Benth, a Tamil plant acclimatized in Sicily. Flavour and Fragrance Journal 2003; 18 (3):202-204.
21. Qiao CF, Li QW, Dong H, Xu LS, Wang ZT. Studies on chemical constituents of two plants from *Costus*. Zhongguo Zhong Yao Za Zhi. 2002; 27(2):123-5.
22. Upadhyay AK, Kumar K, Kumar A, Mishra HS. *Tinospora cordifolia* (Wild) Hook. F. and Thoms. (*Guduchi*) - Validation of the Ayurvedic pharmacology through experimental and clinical studies. Int J Ayurveda Res. 2010; 1(2): 112-121.

23. Ravikumar R, Lakshmanan AJ, Ravi S. Chemical constituents from *Clerodendron serratum*. J Asian Nat Prod Res. 2008; 10(7-8):659-62.
24. Wen-Wan Chao, Bi-Fong Lin. Isolation and identification of bioactive compounds in *Andrographis paniculata* (Chuanxinlian). Chin Med. 2010; 5: 17.
25. Imam H, Zarnigar, Sofi G, Seikh A, Lone A. The incredible benefits of Nagarmotha (*Cyperus rotundus*). Int J Nutr Pharmacol Neurol Dis. 2014; 4: 23-7.
26. Prakash A, Varma RK, Ghosal S. Alkaloid constituents of *Sida acuta*, *S. humilis*, *S. rhombifolia* and *S. spinosa*. Planta Med. 1981; 43(4):384-8.
27. Miyoshi N, Nakamura Y, Ueda Y, Abe M, Ozawa Y, Uchida K, Osawa T. Dietary ginger constituents, galangals A and B are potent apoptosis inducers in Human T lymphoma Jurkat cells. Cancer Lett. 2003; 199(2):113-119.
28. Grzanna R, Lindmark L, Fronzoza CG. Ginger - an herbal medicinal product with broad anti-inflammatory actions. J Med Food. 2005; 8(2):125-132.
29. Surh Y, Park K, Chun K. Antitumor- promoting activities of selected pungent phenolic substances present in ginger. Journal of Environmental Pathology, Toxicology and Oncology 1999; 18(2):131-139.
30. Lumb AB. Mechanism of antiemetic effect of ginger. Anaesthesia 1993; 48(12):1118.
31. Chopra RN, Nayer SL, Chopra IC. Glossary of Indian Medicinal Plants. Council of Scientific and Industrial Research. New Delhi, India, 1956.
32. Miri P, Bae J, Lee DS. Antibacterial activity of [10]-gingerol and [12]-gingerol isolated from ginger rhizome against periodontal bacteria. Phytotherapy Res. 2008; 22: 1446-1449.
33. Kalaiselvi A, Aadhinath Reddy G, Ramalingam V. Ameliorating Effect of Ginger Extract (*Zingiber officinale* Roscoe) on Liver Marker Enzymes, Lipid Profile in Aluminium chloride Induced Male Rats. Int J Pharm Sci Drug Res. 2015; 7(1): 52-58.
34. Funk JL, Frye JB, Oyarzo JN, Timmermann BN. Comparative Effects of Two Gingerol-Containing *Zingiber officinale* Extracts on Experimental Rheumatoid Arthritis. J Nat Prod. 2009; 72:403-407.
35. Suekawa M, Ishige A, Yuasa K, Sudo K, Aburada M, Hosoya E. Pharmacological studies on ginger & Pharmacological actions of pungent constituents, (6)-gingerol and (6) -shogaol. J Pharmacobiodyn. 1984; 7(11):836-848.
36. Dhanukar SA, Karandikar SM, Desai SM. Efficacy of *Piper longum* in childhood asthma. Indian Drugs 1984; 21: 384-386.
37. Sharma AK, Singh RH. Screening of anti-inflammatory of certain indigenous drugs on carrageen induced hind paw edema in rats. Bull Med Ethanobot Res. 1980; 2: 262-264.
38. Manoharan S, Silvan S, Vasudevan K, Balakrishnan S. Antihyperglycemic and antilipidperoxidative effects of *Piper longum* Dried Fruits in Alloxan Induced Diabetic Rats. J Biol Sci. 2007; 7(1): 161-168.
39. Wu E, Bao Z. Effects of unsaponifiable matter of *Piper longum* oil on cholesterol biosynthesis in experimental hypocholesterolaemic mice. Honggacayano. 1992; 23(4): 197-200.
40. Vedhanayaki G, Shastri GV, Kuruvilla A. Analgesic activity of *Piper longum* Linn Root. Indian J Exp Biol. 2003; 41(6): 649-651.
41. Natarajan KS, Narasimhan M, Shanmugasundaram KR, Shanmugasundaram ER. Antioxidant activity of a salt-spice-herbal mixture against free radical induction, J Ethnopharmacol. 2006; 105(1-2):76-83.
42. Sawangiaroen N, Sawangiaroen K and Poonpanang P. Antiamoebic effects of *Piper longum* fruit, *Piper sarmentosum* root and *Quercus infectoria* nut gall on caecal amoebiasis in mice. J Ethnopharmacol. 2004; 91(2-3): 357-360.
43. Devan P, Bani S, Suri KA, Satti NK, Qazi GN. Immunomodulation exhibited by piperinic acid of *Piper longum* L., through suppression of proinflammatory cytokines. Int Immunopharmacol. 2007; 7(7): 889-899.
44. Pradee CR, Kuttan G. Effect of piperine on the inhibition of lung metastasis induced B16F-10 melanoma cells in mice. J Clin Exp Meta. 2002; 19(8): 703-708.
45. Rage N, Dhanukar S, Karandukar SM. Hepatoprotective effects of *P. longum* against carbon tetrachloride induced liver damage. Indian Drugs 1984; 21: 569-570.
46. Arambewela L, Perera A, Wijesundera RLC. The volatile constituents and microbiological studies on *kaempheria galanga*, *hibiscus abelmoschus*, and *piper longum*, Acta Horticulturae 501: II WOCMAP Congress Medicinal and Aromatic Plants, Part-2: Pharmacognosy. 1999.
47. Feng J, Lipton JM. Eugenol: Antipyretic activity in rabbits. Neuropharmacology 1987; 26: 1775-1778.
48. Dorman HJD, Surai D, Deans SG. *In vitro* antioxidant activity of a number of plant essential oils and Phytoconstituents. Journal of Essential Oil Research 2000; 12: 241-248.
49. Chaieb K, Hajlaoui H, Zmantar T Kahla-Nakbi, AB, Rouabhia M, Mahdouani K, Bakhrouf A. The chemical composition and biological activity of essential oil, *Eugenia Caryophyllata* (*Syzygium aromaticum* L. Myrtaceae): a short review. Phytotherapy Research. 2007; 21(6): 501-506.
50. Briozzo J, Nunez L, Chirife J, Herszage L, D'Aquino M. Antimicrobial activity of clove oil dispersed in a concentrated sugar solution. J Appl Bacteriol. 1989; 66(1):69-75.
51. Singh AK, Dhamanigi SS, Asad M. Anti-stress activity of hydro-alcoholic extract of *Eugenia caryophyllus* buds (clove). Indian J Pharmacol. 2009; 41:28-31.
52. Prasad RC, Herzog B, Boone B, Sims L, Waltner-Law L. An extract of *Syzygium aromaticum* represses genes encoding hepatic gluconeogenic enzymes. J Ethnopharmacol. 2005; 96(1-2):295-301.
53. Gautam OP, Jain SK, Savita Verma. Anticonvulsant and Myorelaxation activity of *Anacyclus pyrethrum* DC root extract. Pharmacology online 2011: 121-125.
54. Rechelson E. Pharmacology of antidepressants. Mayo Clin Proc. 1990; 65: 1227-1236.
55. Bendjeddou D, Lalaoui K, Satta D. Immunostimulating activity of the hot-water soluble polysaccharide extracts of *Anacyclus pyrethrum*, *Alpinia galanga* & *Citrullus colocynthus*. J Ethnopharmacol. 2003; 88(2): 155-160.
56. Annalakshmi R, Uma R, Subash chandran G, Muneeswaran A. A treasure of medicinal herb *Anacyclus pyrethrum* - A review. Indian J Drugs Dis. 1(3); 2012: 59-67.
57. Casida JE. Pyrethrum flowers and Pyrethroid insecticides. Environmental Health Perspectives. 1980; 34: 189-202.
58. Devasankariah G, Gopala Krishna GVK, Patel, RV, Patel H, Bhatt VK A. clinical appraisal of *Anacyclus pyrethrum* root extract in dental patients. Phytotherapy Res. 1992; 6 (3), 158-159.
59. Athanassiou CG, Karallieratus NG. Insectidal effect and adherence of pyrisec in different grain commodities. Crop protection. 2005; 24:703-710.
60. Bauer R, Greger H, Muller JB, Breu W, Probstle A, Redi K. *In Vitro* inhibition of cyclooxygenase and 5-lipoxygenase by alkaloids from *Eclinnacea* and *Achillea species*. Planta Medica. 1994; 60: 37-40.
61. Joshi C, Gopal M, Byregowda SM. Cytotoxic activity of *Tragi involucrate* Lin. extract. American- Eurasin J Toxicol S. 2010; 3(2):679.
62. Alimuzzaman M, Muniruddin A. Analgesic Activity of *Tragia involucrate*. Dhaka University Journal of Pharmaceutical Sciences 2005; 4(1).
63. Sarath Kumar Y, Sirisha K, Sathish Kumar M. Preclinical Evaluation of Anti Inflammatory Effect of *Tragia Plukenetii* R. Smith Leaf Extracts against Carrageenan Induced Paw Edema In Wistar Albino Rats. Asian Journal of Research in Biological and Pharmaceutical Sciences 2014; 2(1): 34 - 37.
64. Mohamed Farook S, Clement Atlee W. Antidiabetic and Hypolipidemic Potential of *Tragia Involucrata* Linn in Streptozotocin-Nicotinamide induced Type II Diabetic Rats. International Journal of Pharmacy and Pharmaceutical Sciences 2011; 3(4):103-109.

65. Joshi CG, Gopal M, Kumari NS. Antitumor activity of hexane and ethyl acetate extracts of *Tragia involucrata*. International Journal of Cancer Research. 2011; 7: 267-277.
66. Kumar D, Bhat ZA, Chashoo IA, Deoda RS, Mudgade SC, Kumar V. Bronchodilator Activity in Traditional Medicines: Gift of God Kingdom, Bronchitis, Dr. Ignacio Mart n-Loeches (Ed.). 2011.
67. ISBN: 978-953-307-889-2, InTech, Available from: <http://www.intechopen.com/books/bronchitis/bronchodilator-activity-in-traditional-medicines-gift-of-godkingdom>.
68. Patra A, Murthy PN, Jha S, Aher VD, Chattopadhyay P, Panigrahi G. Anti-inflammatory and antipyretic activities of *Hygrophila spinosa* T. Anders leaves (Acanthaceae). Trop J Pharm Res. 2009; 8:133-7.
69. Patra A, Murthy PN, Jha S, Aher VD. Anthelmintic and antibacterial activities of *Hygrophila spinosa* T. Anders. Res J Pharm Tech. 2008; 1: 531-2.
70. Mazumdar UK, Gupta M, Maiti S, Mukherjee D. Antitumor activity of *Hygrophila spinosa* on Ehrlich ascites carcinoma and sarcoma-180 induced mice. Indian J Exp Biol. 1997; 35:4737.
71. Patra A, Murthy PN, Jha S, Sahu AN, Roy D. Analgesic and antimotility activities of leaves of *Hygrophila spinosa* T. Anders. Pharmacologyonline 2008; 2:821-8.
72. Usha K, Kasturi GM, Hemalatha P. Hepatoprotective effect of *Hygrophila spinosa* and *Cassia occidentalis* on carbon tetrachloride induced liver damage in experimental rats. Indian J Clin Biochem. 2007; 22: 132-5.
73. Vijayakumar M, Govindarajan R, Rao GM, Rao CV, Shirwaikar A, Mehrotra S. Action of *Hygrophila auriculata* against streptozotocin-induced oxidative stress. J Ethnopharmacol. 2006; 104: 356-61.
74. Shanmugasundaram P, Venkataraman S. Hepatoprotective and antioxidant effects of *Hygrophila auriculata* (K. Schum) Heine Acanthaceae root extract. J Ethnopharmacol. 2006; 104:124-8.
75. Pawar RS, Jain AP, Kashaw SK, Singhai AK. Haematopoietic activity of *Asteracantha longifolia* on cyclophosphamide induced bone marrow depression. Indian J Pharm Sci. 2006; 3:337-40.
76. Murali YK, Chandra R, Murthy PS. Antihyperglycemic Effect of Water Extract of Dry Fruits of *Terminalia Chebula* In Experimental Diabetes Mellitus. Indian Journal of Clinical Biochemistry 2004; 19 (2): 202-204.
77. Ramadevi SR, Hopper W. Antibacterial activity of *Terminalia chebula* fruit extract. African J Microbiol Res. 2009; 3(4): 180-84.
78. Tayal S, Duggal S, Bandyopadhyay P, Aggarwal A, Tandon S, Tandon C. Cytoprotective role of the aqueous extract of *Terminalia chebula* on renal epithelial cells. IJBU. 2012; 38 (2): 204-214.
79. Rahman M, Mostafa GM, Karim MM. The bactericidal activity of a medicinal plant, *Terminalia chebula* is enhanced upon addition of manganese salts. Int J Med Arom Plants. 2012; 2(2): 214-218.
80. Ahn MJ, Kim CY, Lee JS, Kim TG, Kim SH, Lee CK, Lee BB, Shin CG, Huh H, Kim J. Inhibition of HIV-1 integrase by galloyl glucosides from *Terminalia chebula* and flavonol glycoside gallates from *Euphorbia pekinensis*. Planta Med. 2002; 68(5): 457-59.
81. Vidya S, Verma E, Sanjay kumar J, Anilkumar VT, Ramesh A. Hepato-Protective Activity of *Terminalia Chebula* Leaves in Paracetamol Induced Hepato-Toxicity in Rats. International Journal of Advances in Pharmaceutical Research 2011; 2(4): 127-132.
82. Badmaev V, Nowakowski M. Protection of epithelial cells against influenza-A virus by a plant derived biological response modifier Ledretan-96. Phytotherapy Res. 2000; 14(4): 245-49.
83. Senthilkumar GP, Subramanian SP. Biochemical studies on the effect of *Terminalia chebula* on the levels of glycoproteins in streptozotocin-induced experimental diabetes in rats. J Appl Biomed. 2008; 6: 105-115.
84. Maruthappan V, Sakthi Shree K. Hypolipidemic Activity of Haritaki (*Terminalia Chebula*) in Atherogenic Diet Induced Hyperlipidemic Rats. J Adv Pharm Tech Res. 2010; 1 (2):229-235.
85. Kaur S, Jaggi RK. Antinociceptive activity of chronic administration of different extracts of *Terminalia bellerica* Roxb and *Terminalia chebula* Retz. Fruits. Indian Journal of Experimental Biology 2010; 48: 925-930.
86. Sharma P, Prakash T, Kotresha D, Ansari MA, Sahrm UR, Kumar B, Debnath J, Goli D. Antiulcerogenic activity of *Terminalia chebula* fruit in experimentally induced ulcer in rats. Pharm Biol. 2011; 49(3): 262-68.
87. Chakrabarty A, Brantner AH. Study of alkaloids from *Adhatoda vasica* Nees on their anti-inflammatory activity. Phytother Res. 2001; 15: 532-534.
88. Amin AH, Metha DR. A bronchodilator alkaloid (vasicinone) from *Adhatoda vasica* Nees Nature 1959; 184: 1317.
89. Karthikeyan A, Shanthi V, Nagasathya A. Preliminary Phytochemical and antibacterial screening of crude extract of the leaf of *Adhatoda vasica* (L). Int J Green Pharm. 2009; 3: 78-80.
90. Dhuley JN. Antitussive effect of *Adhatoda vasica* extract on mechanical or chemical stimulation induced coughing in animals. J Ethnopharmacol. 1999; 67: 361-365.
91. Bhattacharyya D, Pandit S, Jana U, Sur TK. Hepatoprotective activity of *Adhatoda vasica* aqueous leaf extract on D-galactosamine induced liver damage in rats. Fitoterapia 2005; 76: 223-225.
92. Venkatesh P, Dinakar A, Senthilkumar N. Evaluation of Hepatoprotective, Analgesic and Antipyretic activity of Aqueous Extracts of *Boerhaavia Diffusa* and *Anisochilus Carnosus*. Int J Pharm Bio Sci. 2013; 4(1): 596 - 603.
93. Mohammed A, Kumar RJ, Santosh HY, Nagashruthi MH. Antulcer activity of *Anisochilus carnosus* leaf extracts in pylorus ligation rats. Indian Drugs 2008; 45:979.
94. Muthuraman MS, Santharam L, Ariraman S, Pemaiah B. Studies on Anticancer and Antimicrobial Efficacy of *Anisochilus carnosus* Wallich - Extract. International Journal of Pharmacy and Pharmaceutical Sciences 2012; 4(2):132-135.
95. Srivastava S, Singh P, Jha KK, Mishra G, Srivastava S, Khosa RL. Anti-inflammatory, Analgesic and Antipyretic Activities of Aerial parts of *Costus speciosus* Koen. Indian Journal of Pharmaceutical Sciences 2013; 75 (1): 83-88.
96. Duraipandian V, Al-Harbi NA, Ignacimuthu S, Muthukumar C. Antimicrobial activity of sesquiterpene lactones isolated from traditional medicinal plant, *Costus speciosus*. BMC Complementary and Alternative Medicine 2012; 12(13): 2-6.
97. Rani AS, Sulakshana G, Patnaik S. *Costus speciosus*, an antidiabetic plant-review. FS J Pharma Res. 2012; 1(3): 52-53.
98. Srivastava S, Singh P, Jha KK, Mishra G, Srivastava S, Khosa RL. Anthelmintic activity of aerial parts of *Costus speciosus*. International Journal of Green Pharmacy 2011; 5:325-328.
99. Bhattacharya SK, Parikh AK, Debnath PK, Pandey VB, Neogy NC. Anticholinesterase activity of *Costus speciosus* alkaloids. Ind J Pharmac. 1972; 4(3): 178-179.
100. Ariharan VN, Meena Devi VN, Rajakokhila M, Prasad PN. Antibacterial activity of *Costus speciosus* rhizome extract on some pathogenic bacteria. International Journal of Advanced Life Sciences 2012; 4: 24-27.
101. Nehete J, Bhatia M, Narkhede M. In-vitro Evaluation of Antioxidant Activity and Phenolic Content of *Costus speciosus* (Koen). Iranian Journal of Pharmaceutical Research 2010; 9(3): 271-277.
102. Verma N, Khosa RL. Effect of *Costus speciosus* and *Wedelia chinensis* on Brain Neurotransmitters and Enzyme Monoamine oxidase following Cold Immobilization Stress. Journal of Pharmaceutical Sciences and Research 2009; 1(2): 22-25.
103. Jeyachandran R, Xavier TF, Anand SP. Antibacterial activity of stem extracts of *Tinospora cordifolia* (willd). Ancient science life. 2003; 23: 40-4.

103. Bafna PA, Balaraman R. Antiulcer and anti-oxidant activity of pepticare: A herbomineral formulation. *Phytomedicine* 2005; 12:264-70.
104. Kavitha BT, Shruthi SD, Padmalatha Rai S, Ramachandra YL. Phytochemical analysis and hepatoprotective properties of *Tinospora cordifolia* against carbon tetrachloride induced hepatic damage in rats. *Journal of Basic and Clinical Pharmacy*. 2011; 2(3): 139-142.
105. Dikshit V, Damre AS, Kulkarni KR, Gokhale A, Saraf MN. Preliminary screening of imunocin for immunomodulatory activity. *Indian J Pharm Sci*. 2000; 62:257.
106. Castillo AL, Ramos JDA, De Francia JL, Quilala PF, Dujunco MU. Immunomodulatory Effects of *Tinospora cordifolia* Lotion on Interleukin-1, Interleukin-6 and Interleukin-8 Levels In Scabies-Infected Pediatric Patients: A Single Blind, Randomized Trial. *International Journal of Pharmaceutical Sciences and Drug Research* 2014; 6(3): 204-210.
107. Puranik N, Kammar KF, Devi S. Anti-diabetic activity of *Tinospora cordifolia* (Willd.) in streptozotocin diabetic rats; does it act like sulfonylureas. *Turk J Med Sci*. 2010; 40 (2): 265-270.
108. Methews S, Kuttan G. Antioxidant activities of *Tinospora cordifolia* and its usefulness in the amelioration of cyclophosphamide induced toxicity. *J Exp Clin Cancer Res*. 1997; 16:407.
109. Gupta AK, Tandon N, Sharma M. Review on Indian Medicinal Plants. Indian Council of Medical Research, New Delhi, 2008; Vol 7:126.
110. Agrawal SK, Jat RK, Chhipa RC. Pharmacological evaluation of Hepatoprotective activity of *Clerodendrum serratum*. *International Journal of Pharmacology & Toxicology* 2013; 3(2):67-70.
111. Gupta AK, Tandon N, Sharma M. Review on Indian Medicinal Plants. Indian Council of Medical Research, New Delhi, 2008; Vol 7:127.
112. Bhargare NK, Pansare TA, Ghongane BB, Nesari TM. Screening for anti-inflammatory and anti-allergic activity of Bharangi [*Clerodendrum serratum* (Linn.) Moon] in animals. *International Journal of Pharma and Bio Sciences*. 2012; 3(4):245-254.
113. Narayanan N, Thirugnanasambantham P, Viswanathan S, Vijayasekaran V, Sukumar E. Antinociceptive, anti-inflammatory and antipyretic effects of ethanol extract of *Clerodendron serratum* roots in experimental animals. *Journal of Ethnopharmacology*. 1999; 65(3):237-241.
114. Saha D, Talukdar A, Das T, Ghosh SK, Rahman H. Evaluation of analgesic activity of ethanolic extract of *Clerodendrum serratum* Linn leaves in rats. *International Research Journal of Pharmaceutical and Applied Sciences* 2012; 2(6):33-37.
115. Zalke AS, Kulkarni AV, Shirole DS, Duraiswamy B. *In vivo* anticancer activity of *Clerodendrum serratum* (L) Moon. *Research Journal of Pharmaceutical, Biological and Chemical Sciences* 2010; 1(3):89.
116. Ojha SK, Nandave M, Kumar S, Arya DS. Antioxidant activity of *Andrographis paniculata* in ischemic myocardium of rats. *Global J Pharmacol*. 2009; 3(3):154-7.
117. Sharmila R, Subburathinam KM, Aishwarya S, Anita Margre A. In-Silico Analysis of Andrographolide against Cancer. *International Journal of Pharmaceutical Sciences and Drug Research* 2013; 5(2): 56-61.
118. Nalamolu Koteswara Rao. Anti-Hyperglycemic and Renal Protective Activities of *Andrographis paniculata* Roots Chloroform Extract. *IJPT*. 2006; 5:47-50.
119. Padma Y, Narasimhudu CL, Devi S, Natha NMB, Naga RB, Philip GH. *In vitro* anthelmintic activity of *Andrographis paniculata* (burm.f.) nees. *Int J Pharm Res Develop*. 2011; 3(3):202-5.
120. Bhardwaj A, Khatri P, Soni ML, Ali DJ. Potent herbal Hepatoprotective drugs- a review. *J Adv Sci Res*. 2011; 2(2):15-20.
121. Sheeja K, Shihab PK, Kuttan G. Antioxidant and anti-inflammatory activities of the plant *Andrographis paniculata* Nees. *Immunopharmacol Immunotoxicol*. 2006; 28(1):129-40.
122. Chen JX, Xue HJ, Ye WC, Fang BH, Liu YH, Yuan SH, Yu P, Wang YQ. Activity of andrographolide and its derivatives against influenza virus *in vivo* and *in vitro*. *Biol Pharm Bull*. 2009; 32(8):1385-91.
123. Singh N, Kulshrestha VK, Gupta MB, Bhargava KP. A pharmacological study of *Cyperus rotundus*. *Indian J Med Res*. 1970; 58: 103-109.
124. Birdar S, Kangralkar VA, Mandavkar Y, Thakur M, Chougule N. Anti-inflammatory, anti-arthritis, analgesic anticonvulsant activity of cyperus essential oils. *Int J Pharm Parmaceut Sci*. 2010; 2(4): 112-115.
125. Singh N, Kulshrestha VK, Gupta MB, Bhargava KP. A pharmacological study of *Cyperus rotundus*, *Indian J Med Res*. 1970; 58: 103-109.
126. Suresh Kumar SV, Mishra H. Hepatoprotective Activity of Rhizomes of *Cyperus Rotundus* Linn against Carbon Tetrachloride-induced Hepatotoxicity. *Indian J Pharm Sci*. 2005; 67(1): 84-88.
127. Meena AK, Yadav AK, Niranjana US, Singh B, Nagariya AK, Verma M. Review on *Cyperus rotundus* - A Potential Herb. *International Journal of Pharmaceutical and Clinical Research* 2010; 2(1): 20-22.
128. Zhu M, Luk HH, Fung HS, Luk CT. Cytoprotective effects of *Cyperus rotundus* against ethanol induced gastric ulceration in rats. *Phytother Res*. 1997; 11: 392-394.
129. Raut, NA, Gaikwad NJ. Antidiabetic activity of hydro-ethanolic extract of *Cyperus rotundus* in alloxan induced diabetes in rats. *Fitoterapia* 2006; 77: 585-588.
130. Uddin SJ, Mondal K, Shilpi JA, Rahman MT. Antidiarrhoeal activity of *Cyperus rotundus*. *Fitoterapia* 2006; 77 (2): 134-6.
131. Oboh IE, Onwukaeme DN. Analgesic, anti-inflammatory and anti-ulcer activities of *Sida acuta* in mice and rat. *Nig J Nat Prod and Med*. 2005; 9: 19 - 21.
132. Akilandeswari S, Senthamarai R, Valarmathi R, Prema S. Screening of Gastric Antiulcer activity of *Sida acuta*. *International Journal of Pharm Tech Research* 2010; 2(2): 1644-1648.
133. Okwuosa CN, Azubike NC, Nebo. Evaluation of the antihyperglycemic activity of the crude extracts of *Sida acuta* in Normal and Diabetic Rabbits. *Indian Journal of Novel Drug Delivery* 2011; 3(3):206-213.
134. Rao KS, Mishra SH. Anti-inflammatory and Hepatoprotective activities of *Sida cordifolia* Linn. *Indian Drugs* 1998; 34:92-97.
135. Karou D, Mamoudou H, Sanon S, Simpore J, Traore AS. Antimalarial activity of *Sida acuta* Burm f (Malvaceae) and *Pterocarpus erinaceus* Poir (Fabaceae). *Journal of Ethnopharmacology* 2003; 89: 291-294.
136. Shrama R, Sharma D, Kumar S. Antipyretic efficacy of Various Extracts of *Sida acuta* leaves. *Research Journal of Pharmaceutical, Biological and Chemical* 2012; 3(2):515-518.
137. Jindal A, Kumar P. Antibacterial Activity of *Sida Acuta* Burm. F. Against Human Pathogens. *Asian J Pharm Clin Res*. 2012; 5(3):33-35.
138. Bahar E, Ara J, Alam M, Nath B, Bhowmik U, Runi N. *In-vitro* Antioxidant and Thrombolytic activity of Methanol extract of *Sida acuta*. *Journal of Pharmacognosy and Phytochemistry*. 2013; 2(2): 125-133.
139. Barik CS, Kanungo SK, Tripathy NK, Panda JR, Padhi M. A Review on Therapeutic Potential of Polyherbal Formulations. *Int J Pharm Sci Drug Res*. 2015; 7(3): 211-228.

|  |
|--|
| Source of Support: Nil, Conflict of Interest: None declared. |
|--|