e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

FORMULATION AND EVALUATION OF SKIN AND HAIR BENEFITS OF LIQUORICE ROOT

Rohit Lalasahreb Kanade*1, Prof. A.N. Raut*2, Dr. Santosh Jain*3

*1,2,3Aditya Institute Of Pharaceutical, Beed, India.

DOI : https://www.doi.org/10.56726/IRJMETS59706

ABSTRACT

Liquorice root, derived from the plant Glycyrrhiza glabra, has been utilized in traditional medicine for centuries due to its diverse therapeutic properties. This abstract explores the effects of liquorice root on skin and hair health, focusing on its active compounds and their benefits. Liquorice root contains various bioactive compounds, including glycyrrhizin, liquidity, and glaring. These compounds exhibit anti-inflammatory, antioxidant, and antimicrobial properties, making liquorice root a valuable ingredient in dermatological and hair care products.

Keywords: Traditional, Dermatology, Health, Root, Ingredients.

I. INTRODUCTION

Glycyrrhiza glabra, family Leguminoseae, is a plant which grows in Egypt and other countries of the World. Its roots possess some nutritive value and medicinal properties. Glycyrrhiza glabra Linn, a Commonly used herb in ayurvedic medicine. Studies indicate that Glycyrrhiza glabra Linn possesses Antibacterial, antioxidant, antimalerial, antispasmodic, anti- inflammatory and anti-hyper glycemic Properties. Various other effects like antiulcer, antiviral, antihapatotoxic, antifungal and herpes simplex Have also been studies. One of the most commonly reported side effects with licorice supplementation is Elevated blood pressure Licorice (Glycyrrhiza glabra Linn) As a Valuable Medicinal Plant.

Fig 1:

Scientific Classification

Table 1:

Synonyms	Glycyrrhiza brachycarpa, Glycyrrhiza hirsuta
Family	Leguminosae
Kingdom	Plantae
Division	Angiospermae
Class	Dicotyledoneae
Order	Order
Genus	Glycyrrhiza

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

Species	glabra Linn
Binomial Name	Glycyrrhiza glabra Linn

Fig 2: Licorice

PHARMACOGNOSY

Glycyrrhiza glabra Linn is a hardy perennial shrub, attaining a height up to 2.5 m. The leaves are Compound, imparipinnate, alternate, having 4-7 pairs of oblong, elliptical or lanceolate leaflets. The Flowers are narrow, typically papilionaceous, borne in axillary spikes, lavender to violet in colour. The Calyx is short, campanulate, with lanceolate tips and bearing glandular hairs. The fruit is a Compressed legume or pod, up to 1.5 cm long, erect, glabrous, somewhat reticulately pitted, and Usually contains 3-5 brown, reniform seeds. The taproot is approximately 1.5 cm long and subdivides Into 3-5 subsidiary roots, about 1.25 cm long, from which the horizontal woody stolons arise. These May reach 8 m and when dried and cut, together with the root, constitute commercial liquorice. It May be found peeled or unpeeled. The pieces of root break with a fibrous fracture, revealing the Yellowish interior with a characteristic odour and sweet taste.

REPORTED PHYTOCHEMICALS

The roots of Glycyrrhiza glabra Linn contain glycyrrhizin, which is a saponin that is 60 times Sweeter than cane sugar; Flavonoid rich fractions include liquirtin, isoliquertin liquiritigenin and Rhamnoliquirilin and five new flavonoids- glucoliquiritin apioside, prenyllicoflavone A, shinflavanone, Shinpterocarpin and 1-methoxyphaseolin (Rastogi RP and Mehrotra BN) isolated from dried roots. Isolation and structure determination of licopyranocoumarin, licoarylcoumarin, glisoflavone and New coumarin-GU-12 also isolated. Four new isoprenoid- substituted phenolic constituents semilicoisoflavone B,1-methoxyficifolinol, isoangustone A, and licoriphenone isolated from roots. (Rastogi RP and Mehrotra BN) A new prenylated isoflavan derivative, kanzonol R was also isolated . The presence of many volatile components such as pentanol, hexanol, linalool oxide A and B, tetramethyl pyrazine, terpinen-4-ol, α- terpineol, geraniol and others in the roots is reported. Presence of propionic acid, benzoic acid, ethyl linoleate, methyl ethyl ketine, 2,3-butanediol,furfuraldehyde, furfuryl formate, 1-methyl- 2-formylpyrrole, trimethylpyrazie,maltol and any other compounds is also isolated from the essential oil. The Indian roots show various 2-methyliso flavones, and an unusual coumarin, C

liquocoumarin, 6 - acetyl- 5, hydroxy- 4 - methyl coumarin. Asparagine is also found. Glycyrrhizin (glycyrrhizic acid; glycyrrhizinate) constitutes 10–25% of licorice root extract and is considered the primary active ingredient. Glycyrrhizin (Figure 2) is a saponin compound comprised of a triterpenoid aglycone, glycyrrhetic acid (glycyrrhetinic acid; enoxolone) conjugated to a disaccharide of glucuronic acid. Both glycyrrhizin and glycyrrhetic acid can exist in the 18α and 18β stereoisomers.

Keywords::. Glycyrrhiza glabra, environmental and soil analysis, phytochemical variation, Antioxidantactivity.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

CULTIVATION OF LICORICE

Licorice can be cultivated or obtained from Wild plants. The plants are known to grow well in deep fertile sandy soils near streams In the subtropics. Dry seasons are beneficial To the crop and thrives well in warm regions Where the annual rainfall is not more than 50cm. Fertile sandy of sandy-loan soils Devoid of any stones are optimal for licorice. Manuring is not required unless the soil is not fertile [Singh et al 1984]. G.uralensis,Another species of Glycyrrhiiza known to Yield commercial products was reported by Nadezhina et al [1981] to grow in dense Sands. G.glabra was found to exist under wide Range of soil salinity [Mirkin et al 1971].

Drought resistant variety of G. glabra was reported by Aprasidi [1978] from the flood Plains of river Amudarya. Khafizova [1978] recorded the highest yield of roots and top Growth of Golodnaya steppe and Amudarya Populations of licorice in chloride sulphate Soils of Uzbek,

USSR.

Mohammad and Rehman [1985] compared the cultivation of licorice in irrigated and Rainfed sanddunes. Survival percentage was more in irrigated sands. To achieve stable Yields of licorice, irrigation of G.glabra was a must in oasis region sands [Durmeshev 1986]. It was reported by Osipov [1987] that variations in the yield of root mass of Licorice was caused by different Hydrogeologic regimes of Amudarya flood Plain. Increase growth was recorded where Subsoil waters were at a depth from 177cm To 195cm. Reclamation of desert sands upon

Cultivation of licorice was demonstrated in Sands adjacent to oases in the Russian desers [Kel'dzhaev and Gladyshev 1982]. A study Carried out by Varganov and Gladyshev [1981] revealed the utility of cultivation ofLicroce on oasis sands in stabilization of Sand and quick improvement of soil. Similar report was also on record [Mohammad and Rehman 1985] which

Shows the stabilization of sanddunes after Cultivation of licorice.Though inter-plantation of carrot, potato or Cabbage crops along with licorice is feasible For the first two years, it is discouraged in The view of the increase in weed population [Singh et al 1984].Reports are available on the cultivation of Licorice in India. It was found to grow well In Patiala, Hissar of

Haryana State [Singh 1964], Uttar Pradesh [Uniyal et al 1978] and In South India [Ahmad and Khaleefathullah 1986]. Abrus precatorius Linn. Is commonly called as wild licorice, Indian licorice or licorice bush. Though the roots of this plant are found as a substitute for genuine roots, it was not recommended byChopra et al [1958] due to the toxic Properties associated

II. SKIN AND HAIR INTRODUCTION

The cosmetics are the utility products used extensively throughout the world for Maintaining and improving general appearance of face and other parts of bodye.g. mouth, hand Finger, eye, hair, etc. It includes creams, powders, face pack, lotions, moisturizers, shampoo, hair Oil, conditioners, nail polish, etc. Smooth, shinning, healthy skin and hair certainly count for a Beautiful woman or handsome man. Numerous chemical toxins, microorganisms, chemicals, Infections present in atmosphere cause damage to skin. Cosmetics alone are not sufficient to take Care of skin and body parts, it require association of active ingredients to check the damage and Ageing of the skin. Herbal cosmetics are now emerged as the appropriate solution to the current Problem. Personal care industry is currently more concentrated on herbal cosmetics as now-a-days It is a fast growing segment with a vast scope of manifold expansion in coming years. Herbal Cosmetics are the preparations, which represent cosmetics associated with active bio-ingbotanical Neutraceuticals or pharmaceuticals. The use of bioactive phytochemicals from a variety of bbotanical Have dual function, (i) they serve as cosmetics for the care of body and its parts and (ii) the Botanical ingredients present therein influence biological functions of skin and provide nutrients Necessary for the healthy skin or hair. In general, botanicals provide different vitamins, antioxidants, Various oils, essential oils, hydrocolloids, proteins, terpenoids and other bioactive molecules. A Vast biodiversity and different climatic conditions of our country provide a variety of botanicals, Which can be used in the formulations. Our traditional knowledge about the use of plant wealth as Described in Ayurveda, Siddha, Unani and Tibetan system of medicine, is of great help to identify The phytochemicals for skin and body care preparations. Necessary efforts are required to associate The modern cosmetology with bioactive ingredients based on our traditional system of medicine Leading to emergence of novel cosmoceuticals for skin and body care.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

III. TYPES OF HAIR LOSS

1 Alopecia Areata (prime stage)

Alopecia Areata is a common autoimmune disease that Results in the loss of hair on the scalp and else Where. It usually starts with one or more small, Round, non-scarring smooth patches. Mild Brief Alopecia Areata- Patient with repeated transient Alopecia areata but never converts into alopecia Totalis or universalis

1 Temporary Alopecia Areata

Patient with Alopecia areata in advanced phase and some of Them converts into Alopecia totalis/Alopecia Universalis.

2 Alopecia Totalis

Loss of hair from whole Scalp.

4. Alopecia Universalis

Loss of hair from entire body including eyebrows and eyelashes Scar ring Alopecia Any inflammatory process (burns, bacterial infections, ringworm, injury) necessary to cause permanent loss of follicles, affected area known as Scarring alopecia.Trichotillomania -This type of hair loss is known as compulsive pulling or dull selfpulling by a patient Himself or herself.

TYPES OF SKIN

OILY SKIN

Oily skin is caused by an over-secretion of sebum, an oily substance our skin needs in order to function properly. Too much of this sebum can cause acne and too little can cause dry, cracke skin. The main characteristics of oily skin include: Shiny and often has breakouts.

DRY SKIN

Dry skin can have causes that aren't due to underlying disease. Examples include dry environment, frequently washing hands, inadequate hydration, swimming in a chlorinated pool or jobs that are rough on the hands such as mechanics or farming.

COMBINATION SKIN

A type of facial complexion characterized by an oily forehead, nose, and chin and relatively dry cheeks.using an excessive amount of moisturizer on combination skin will lead to blocked pores"

IV. MECHANISM OF ACTION

The beneficial effects of licorice can be attributed to a number of mechanisms. Glycyrrhizin and Glycyrrhizic acid have been shown to inhibit growth and cytopathology of numerous RNA and DNA Viruses, including hepatitis A9 and C, (Van Rossu et alm ,1999) herpes zoster ,HIV, (Hattori et al, 1989) Herpes simplex and CMV. Glycyrrhizin and its metabolites inhibit hepatic metabolism of aldosterone and Suppress 5-ßreductase, propReported Phytochemicalserties responsible for the well-documented pseudoaldosterone syndrome. The Similarity in structure of glycyrrhetic acid to the structure of hormones secreted by the adrenal cortex Accounts for the mineralocorticoid and glucocorticoid activity of glycyrrhizic acid.18 Licorice Constituents also exhibit steroidlike anti-inflammatory activity, similar to the action of hydrocortisone. This is due, in part, to inhibition of phospholipase A2 activity, an enzyme critical to numerous

Inflammatory processes. In vitro research has also demonstrated glycyrrhizic acid inhibits Cyclooxygenase activity and prostaglandin formation (specifically prostaglandin E2), as well as indirectly Inhibiting platelet aggregation, all factors in the inflammatory process (Okimasu et al, 1983).

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

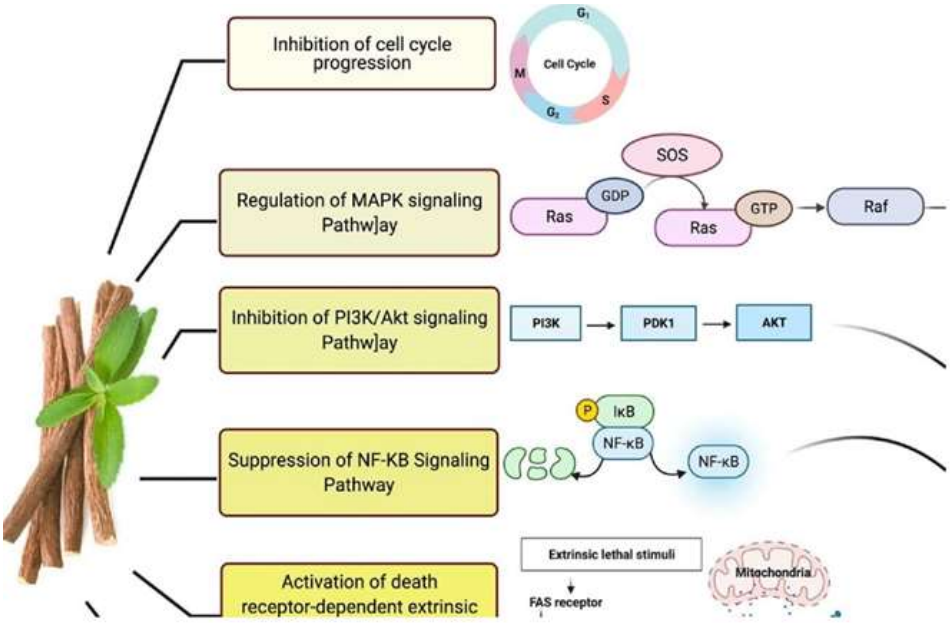

Fig 3: Machanism of Action Licorice

REPORTED PHYTOCHEMICALS

The roots of Glycyrrhiza glabra Linn contain glycyrrhizin, which is a saponin that is 60 timesSweeter than cane sugar; Flavonoid rich fractions include liquirtin, isoliquertin liquiritigenin andRhamnoliquirilin and five new flavonoids- glucoliquiritin apioside, prenyllicoflavone A, shinflavanone, Shinpterocarpin and 1-methoxyphaseolin (Rastogi RP and

Mehrotra BN) isolated from dried roots. Isolation and structure determination of licopyranocoumarin, licoarylcoumarin, glisoflavone and New coumarin-GU-12 also isolated.

Four new isoprenoid-substituted phenolic constituents

BENEFITS OF HAIR AND SKIN

- Helps control' diabetes:
- Effective blood sugar management can reduce the risk of eye disease, kidney disease, and nerve disease by 40%. Blood pressure management can reduce the risk of heart disease and stroke by 33% to 50%. Improved cholesterol levels can reduce
- Boosts immunity:
- Having a strong immune system is one of the biggest advantages for humans and there are many steps individuals can take to help strengthen their immune systems to help fight infections and reduce the risk of contracting highly contagious diseases.
- Treats cough cold and flu:
- Warm Honey Lemon Water: This soothing drink combines warm water with the natural goodness of honey and lemon. Honey helps soothe the throat and provides a coating effect, reducing irritation and coughing. Lemon is rich in vitamin C, which supports the immune system and helps fight off cold-related symptoms.
- Assist Cancer treatment:
- Chemotherapy may shrink your cancer or slow down its growth, which may help you live longer and help with your symptoms. For a small number of people with borderline resectable cancer, chemotherapy may shrink the cancer enough to make surgery to remove the cancer possible.
- Cleneses your Respiratory systems :-
- A lung cleanse may be helpful for individuals who have a health condition that causes breathing difficulties, such as asthma, chronic obstructive pulmonary disease (COPD), or cysticfibrosis. You may also benefit from a lung cleanse if you're a heavy smoker or have to use certain inhaled medications.28 May 2020
- It helps acidity and acts as mild laxative :-

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

- Laxatives cause changes in your digestive system that make it easier for you to poop. Some work by making your stool softer so it's easier to pass. Others stimulate the muscles in your colon to move the stool along. Some types do both.
- Hair loss prevention and dandruff treatment :-
- They can also help to unclog hair follicles, which can be blocked by oils and other impurities, preventing hair growth. Additionally, scalp treatments can also help to remove dead skin cells,dandruff, and other impurities that can cause itching and irritati

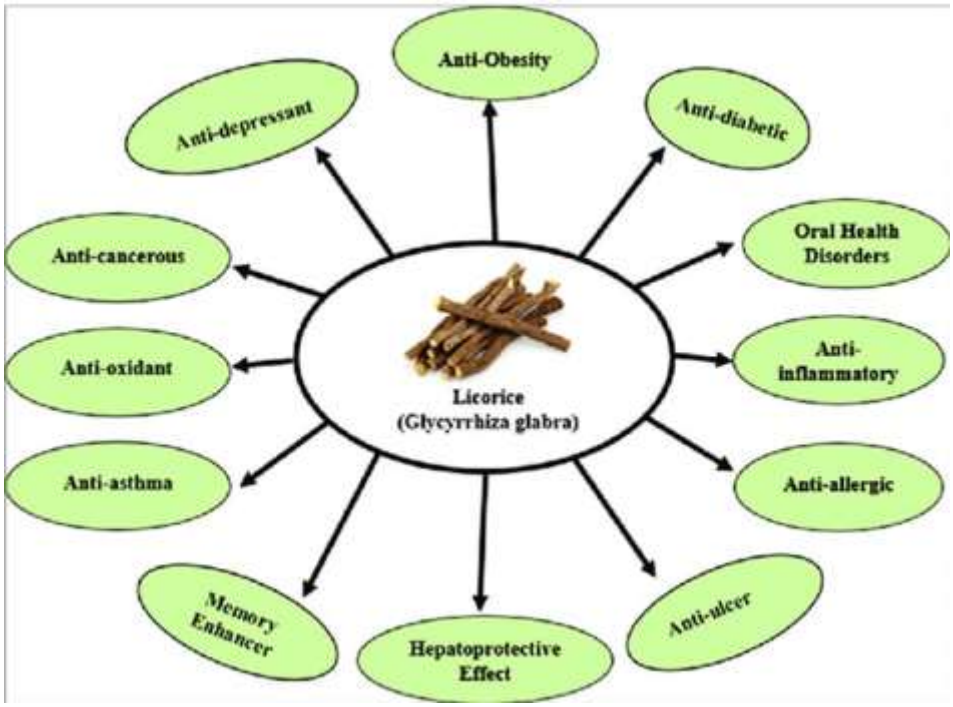

Fig 4: Benefits of Hair and Skin Licorice

V. RESULT AND DISCUSSION

EVALUATION TEST

1. T.S. OF LICORICE ROOT

It was used traditionally for treating a variety of conditions, including lung, liver, circulatory, and kidney diseases. Today, licorice root is promoted as a dietary supplement for conditions such as digestive problems, menopausal symptoms, cough, and bacterial and viral infections.

2. STABILITY TESTING:

Subjecting the cream to various conditions (temperature, light, etc.) to evaluate its stability over time.

3. SPREADABILITY:

Determining how easily the cream spreads on the skin without feeling greasy or sticky.43.85

4. ABSORPTION RATE:

Measuring how quickly the cream absorbs into the skin, ensuring it doesn't leave a residue.

5. MOISTURIZING EFFICACY:

Evaluating the cream's ability to hydrate and moisturize the skin over time.

6. SKIN IRRITATION TESTING:

Conducting patch tests to assess the cream's potential to cause irritation or allergic reactions.

7. EFFICACY TESTING:

Conducting clinical trials to assess the cream's effectiveness in achieving its intended skincare benefits.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

8. MICROBIOLOGICAL TESTING:

Checking for the presence of harmful microorganisms to ensure product safety.

9. PACKAGING COMPATIBILITY:

Assessing whether the cream interacts adversely with its packaging material.

10. PH DETERMINATION

The extract was dissolve in 10 ml of distilled water for eval-uating the pH. The pH was determined using digital pH meter. The pH was measured 5 to 5.5

Fig 5: PH. DETERMINATION

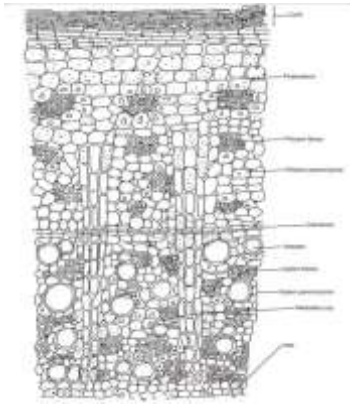

Fig 6: T.S. OF LICORICE ROOT

Fig 7:

SPREADABILITY TEST

DRUG PROFILE

Fig 8:

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

Table 2:

Sr.no.	Properties	Licorice
1	Category	Herbal Suppliments
2	Appearance	Solid
3	Colour	Brown To Black
4	Molecular Formula	C42H62O16
5	Moleculara Weight	822.9g/mol

FORMULATION:

Table 3:

Sr.No.	Ingredient	Quantity
1	Liquorice	1gm
2	Steric acid	5gm
3	Cetyl alcohol	3gm
4	Almond Oil	2ml
5	Glycerine	2ml
6	Methyl Paraben	0.02gm
7	Triethanolamine	Qs

Fig 9:

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:06/June-2024 Impact Factor- 7.868 www.irjmets.com

Result:

The results of the formulation and evaluation of licorice (Glycyrrhiza glabra Linn) for skin and hair benefits would typically include findings related to its effectiveness in addressing various dermatological and hair-related concerns. This could encompass parameters such as its antioxidant properties, ability to reduce inflammation, impact on skin hydration, potential for hair growth stimulation, and any observed side effects or limitations. Overall, the results would provide insights into the potential utility of licorice extract in skincare and haircare formulations.

Table 4:

Sr.No.	Evaluation Parameter	Result and Observation
1	Appearance	Colour. Golden Yellow
2	Feel	Smooth
3	Homogeneity	Good
4	PH	5 to 5.5
5	Spredability	43.85
6	Gritiness	Not Grity Particals
7	Odour	Pleasant

VI. CONCLUSION

Licorice (Glycyrrhiza glabra Linn) root and its extract such as glycyrrhizin have a long history of use in Traditional medicines, folk remedies, and as a sweetening and flavoring agent. Pharmacological studies Have evaluated several of the traditional health claims behind licorice use although many of these reports Have produced inconsistent results. Carbenoxolone, an analog of glycyrrhetic acid, has shown success in Clinical trials for gastric and duodenal ulcers, but thepotential development of pseudoaldosteronism has Limited its use. Deglycyrrhizinated licoriceHas also shown some effect in thetreatment of gastrointestinal ulcers, suggesting the presence ofActive ingredients other than glycyrrhizin, although other studies have shown has no bbeneficia Effects.

VII. REFERENCES

[1] Arystanova,T.; Irismetov, M. and Sophekova, A.(2001): Chromatographic determination of Glycyrrhizinic acid in Glycyrrhiza glabra preparation. Chem. Nat. Com., 37: 89-91.

[2] Ates DA and Erdoúrul OT, Antimicrobial Activities of Various Medicinal and Commercial PlantExtracts, Turk J Biol, 2003; 27: 157-162

[3] Baba M, Shigeta S. Antiviral activity of glycyrrhizin against Varicella-zoster virus in vitro.AntiviralRes 1987;7:9

[4] Fenwick, G.; Lutomski, J. and Nieman, C. (1990): Glycyrrhiza glabra L. (Liquorice): Composition,uses And analysis. Food Chem., 38(2): 119- 143.9-107.

[5] Fenwick GR, Lutomski J and Nieman C, Liquorice, Glycyrrhiza glabra Linn L.Composition, uses and Analysis. J Food Chemistry, 1990; 38:119–143

[6] Isbrucker RA and Burdock GA, Regulatory Toxicology and Pharmacology, 2006; 46: 167– 192.

[7] Stormer FC, Reistad R, Alexander J. Glycyrrhizic acid in liquorice – evaluation of health hazard. Food Chem Toxicol 1993;31:303-312

[8] Stormer FC, Reistad R, Alexander J. Glycyrrhizic acid in liquorice – evaluation of health hazard. Food Chem Toxicol 1993;31:303-312.

[9] Zhang Y, Zhang S, Shen L, Yan Z, Zhang H [1986] Bull Hunen Med. Coll 11 [3] 299 – 302.
[10] Zeng L, Zhang R, Meng T, Lou Z [1990a] J Chromatography 513 [0] 247 – 254.
[11] Yumatni Y, Shigeree T, Kazo T, Isav O, Trukasa T [1980] J Fac Appl Biol Sci Hiroshima Univ 19 [1]113 – 120.
[12] Yasukawa K, Takido M, Takeuchi M, Nakagawa S [1988] Yakugaku Zasshi 108 [8] – 794 – 796.
[13] Yamamoto O, Yamada Y [1987] Pl Cell Tissue Org Cult 8 [2] 125 – 133.
[14] Vasil IK, Vasil V [1980] In : Presprectives in Plant Cell & Tissue Culture [Ed. IK Vasil] Suppl. 11 Bp.1-19.
[15] Urazaliev KR, Svanbaev ES [1989] Izv Akad Nauk Kaz SSR Ser Biol 0 [4] 23-26.
[16] Uniyal MR, Tiwary J, Dixit RS, Purohit GN [1978] J Res Indian Med Yoga Homeopathy 13 [2] 112-113.
[17] Sato H, Kurosaki Y, Edo K, Mizugaki M [1987] Yakugaku Zasshi 107 [11] 891 – 897.
[18] Raikora D, Avramova C [1986] Farmatsia [Sofia] 36 [3] 6 – 10.
[19] Parikh MD, Pradhan PV, Shah LP, Bagadia VN [1984] J Res Ayur Siddha 5 [1-4] 12 – 17.
[20] Nakagawa K, Fukui H, Tabata M [1986] Plant Cell Rep 5 [1] 69-71.
[21] Nakanishi T, Inda K, Kambayashi K, Yoneda k [1985] Phytochem 24 [2] 339 – 341.
[22] Pompei R, Pani A, Flore O, Marcialis MA, Laddo B [1980] Experientia 35 [3] 304.
[23] Nadar TS, Pillai MM [1989] Indian J Exp Biol 27 [11] 959 – 962.
[24] Nadenzhina TP, Markova LP [1981] Rastit Resur 17 [1] 135 – 145.