



Formulation and Evaluation of Poly Herbal Anti Acne Face Wash

K. Kameswararao*, T.karun Kumar, K.Malleswari, V.Ramya Krishna, P.N.S.S.Satyanarayanamma, M.Sandhyanjali.

Department of Pharmaceutics, Adarsa College of pharmacy, G.Kothapalli - 533285.

Article info

Article history:
Received 07 MAY 2019
Accepted 16 MAY 2019

*Corresponding author:
kameshkancharla@gmail.com.

Copyright © 2019 irjpbs

Abstract

Now days Usage of herbal medicines has increased many folds an account of side effects observed with conventional drugs. In the world increases the demand for uses of herbal medicines. Acne is a chronic inflammatory condition of skin that causes pimples and spots, on the face, shoulders, back, neck, chest, and upper arms. In present study various attempts were made to development and evaluation of the herbal anti-acne gel containing rose water extract of leaves of saw palmetto (*Serenoa repens*), peel of banana (*Musa acumianata*), flower of lotus (*Nelumbo nucifera*), fruit of tomato (*Solanum lycopersicum*) fruit of and cucumber (*Cucumis sativus*) is a cleansing agent, honey as moisturizer, lemon juice as a preservative, sandal as flavoring agent through to make pure herbal formulation without using any synthetic ingredient. The plants have been reported in literature having good antiaging, anti-microbial, anti-oxidant, antiseptic, and anti-inflammatory activity. Various formulation batches i.e., F1 to F5 were prepared using saga powder is used as a gelling agent. The Prepared formulations (F1 to F5) were evaluated for various parameters. Like color, appearance, consistency, wash ability, pH, spread ability, grittiness, viscosity, homogeneity, extrudability and skin irritation test. Amongst all the formulation studies shows that *Nelumbo nucifera* (F2) containing gel was found optimum for the all parameter it was very good attempt to establish the herbal anti acne face wash gel contain rose water extract of herbal products.

KEY WORDS: herbal medicines, *Serenoa repen*, *Musa acumianata*, *Solanum lycopersicum*, *Cucumis sativus*, and pilocebaseous gland.

INTRODUCTION

Acne is an infection of the skin, caused by changes in the sebaceous glands. The most common form of acne is called acne vulgaris, which means "common acne". The redness comes from the inflammation of the skin in response to the infection [1]. Oils from the glands combine with dead skin cells to block hair follicles. Under the blocked pore, oil builds up. Skin bacteria can then grow very quickly. This infection makes the skin become swollen and red, which becomes visible. The face, chest, back, and upper arms are most common places for acne to happen.

Acne is common during puberty, when a person is turning from a child into an adult, because of high levels of hormones. Acne becomes less common as people reach adulthood.

The term acne is derived from Greek word acme which means prime of life. Although generally considered to be a benign, self limiting condition, acne may cause severe psychological problems or disfiguring scars that can persist for a lifetime. It is a polymorphic disorder and can manifest at any time during life but it most commonly presents between ages of 12-24, which estimates of 85% of population affected.

Acne vulgaris is an extremely common disorder of skin (pilocebaseous unit) that affects virtually all individuals at least once during life. The incidence of acne peaks at teenage, but substantial numbers of men & women between 20-30 years of age are also affected by the disorder [2].

ACNE-VARIOUS TYPES

Acne rosacea

It is a skin disease of adults often affected by women in which blood vessels of the face enlarge indicating a flushed appearance. Rosacea is a common, chronic, incurable, adult acne-like skin condition that is easily controllable and curable medically. Rosacea usually acts upon the central third of the face, especially the nose with periodic aggravation and relief. The symptoms may come and go and the skin may be clear for weeks, months, or years and then may emerge time and again. Rosacea inclind to develop in certain stages and causes to create inflammation of the skin of the face, especially the forehead, cheeks, nose, as well as chin. Symptoms and signs of rosacea are: Redness of the face, tiny red pimples and fine red lines on the facial skin [3]. An enlarged, bulbous red nose. Eye problems, like swollen, red eyelids and conjunctivitis [4].

Acne vulgaris

The most common form of acne; usually affects people from puberty to young adult hood. Acne vulgaris is a general skin condition characterized by the development of seborrhea, comedones, nodules, papules, pustules and cyst. It comes in the areas of the skin with plentiful hair growth such as in the upper chest, back, legs and face. Sebaceous glands get infected and clogged. Development of several large and small eruptions.

Hickey, pimple, zit

A small inflamed elevation of the skin; a pustule or papules which are common symptoms in acne. Difference between a pimple and acne Unlike common acne, rosacea is not primarily a disease of teenagers but occurs most often in adults (ages 30-50), especially in those with fair

skin. Different than acne, there are usually no blackheads or whiteheads in rosacea. Certain people get one or two spots off and on while others get frequent eruption of spots with lots of pus-filled pimples indicates acne which is a chronic or prolonged condition that affects many teens and adults. More or less all human beings in the world gets pimples at some point of time sooner the body enter into puberty stage at the age of 12, there commence to release hormones and start to function in the bodies of man or woman irrespectively and at this juncture food or pollution, ought to upset hormonal balance thereafter.

Types of pimples

Pimples or spots come out when the skin produces much more oil, causes breeding bacteria which clog the existing pores creating swelling and redness on the skin. Pimples are not at all contagious. Out of various kinds of pimples the most common types are mentioned below and are shown in Figure 1.

Six types of pimples [5,6]

1. Whiteheads – Remain under the surface of skin and are very small.
2. Blackheads – Vividly look black and rise to the surface of the skin but are not formed due to dirt. Black heads are not black because of dirt they are black in color. Generally air oxidizes the protein called keratin.
3. Papules – They are small tender pink bumps which are clearly seen on the skin.
4. Pustules – Pustules (pimples or zits) are red at the bottom level consisting of pus at its top and can be looked on the surface of the skin.
5. Nodules – Clearly visible on the surface of the skin. They are painful, large, solid pimples existing deeply in the skin and can be seen on the skin surface.
6. Cysts – Clearly visible on the surface of the skin. They are deeply rooted, painful and pus filled and easily prone to form scare.

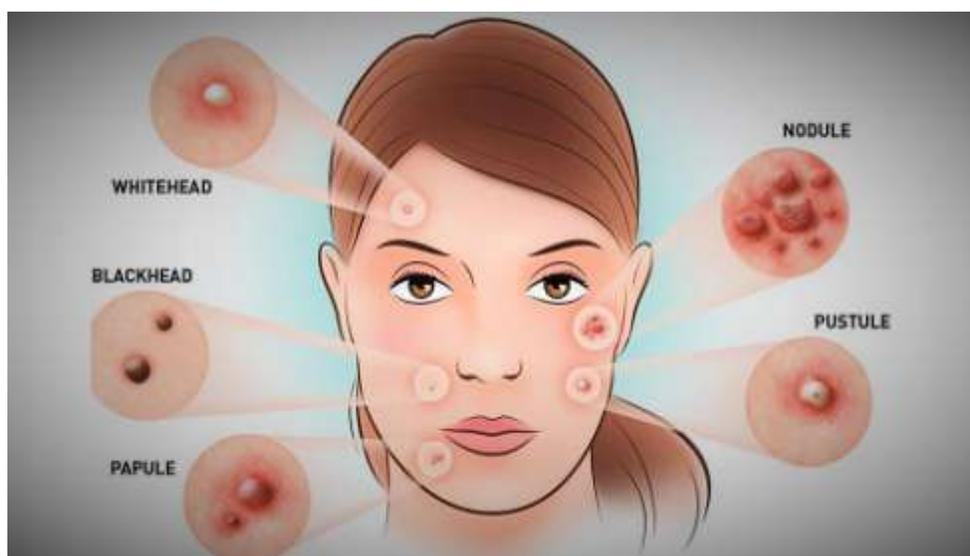


Figure 1. Types of acne

Acne - baby pimples

Baby's acne is very common and exists at birth itself but appears after a couple of weeks. They akin to the teenage acne and can be seen as white or red bumps or pimples with red skin. Baby acne usually appears on the cheeks and sometimes on the forehead, the chin, and even the back and they become more clearly seen when the baby is hot or noisy. Baby acne usually clears up within a few weeks, but it may be delayed for months. In case it won't clear up within three months, treatment with mild topical medication is inevitable. Don't use over-the-counter acne medicines. Don't scrub. Baby acne isn't caused by dirt so too much washing get more irritation to skin of the baby. Don't apply oily lotions on the skin which make the baby's acne worse. Simple wash of baby's face with mild baby soap and water once in a day is enough and gently pat it dry.

Acne-symptoms

Acne can be found anywhere on your body. Commonly it develops on the face, back, neck, chest, and shoulders. If you have acne, you will typically notice pimples that are white or black in appearance. Both blackheads and white heads are known as come downs. Black heads open at the surface of the skin giving them a black appearance. White heads are closed just under the surface of the skin, giving them a white appearance. While whiteheads and blackheads are the most common types of acne, other lesions can occur. Inflammatory lesions namely papules, pustules, nodules and cysts are more likely to create scarring of the skin [7,8,9].

Types of acne scars [10]

Table.no.1.various types of scars and their characteristics

Scars	Characteristics
Box car scars	Angular scars occur on cheeks and can be either superficial or deep similar to chickenpox scars
Ice pick scars	Deep pits are most common, sign of acne scarring
Rolling scars	Wave like appearance in skin
Hypertrophic scars	Thickened or keloid scars
Pigmented scars	True scars, Change in the skin's pigmentation, As a result of nodular or cystic acne, inflamed red mark

Acne – causes

The following are some of the risk factors that may influence for developing acne.

- Administration of Hormonal changes caused by puberty or pregnancy.
- Certain medications such as birth control pills or corticosteroids.
- A diet containing huge refined sugars or carbohydrates like bread and chips.

- Young people are most at risk for developing acne during puberty. During this time, the body undergoes drastic hormonal changes.
- These hormones can trigger oil production, leading to an increased risk of acne. Hormonal acne related to puberty usually subsides when a teenager reaches adulthood.
- Acne lesion implies whiteheads, blackheads, small bumps, nodules and cysts.
- Despite acne is fundamentally a normal physiological occurrence, the following prominent conditions may make worse its state.
- Fluctuation of hormone levels of women at the time of menstruation.
- Disturbing the acne lesions by picking or prodding or hardly press them.
- Covering especially total forehead and face with Clothing, hats and sports helmets etc, which badly press the acne lesions.
- Better to avoid pizza, greasy and fried foods, and junk foods which are not at all good for overall health, in spite of the fact that they don't create acne or make it worse.
- Excessive washing to get rid of dirt from acne can dry and irritate the skin. So essentially gentle wash should be preferred.
- Pressure over the acne to be totally avoided.
- In certain patients acne may occur from heredity or can aggravate them.
- In some patients, pressure from helmets, chin straps, collars, suspenders, and the like can aggravate acne.
- Some medications may cause or worsen acne, which containing iodides, bromides, or oral or injected steroids, prednisone, deltasone, orasone, prednisone-M, liquid red or the steroids.
- In certain specific jobs holders are prone to expose to industrial products may cause of production acne.
- Some cosmetics and skin-care products are pore clogging. So water-based products are normally best among lot for those are suffering from acne suffering from acne.
- Rosacea: This condition is characterized by pimples but not comedowns and occurs in the central part of the face showing redness, flushing, generally occurs to the people above 30 to40 years of age.
- Pseudofolliculitis often called razor bumps or razor rash which causes tender bumps those who suffer from acne, if they use razor for shaving.
- Pimples (folliculate) can also occur on other parts of the body namely the abdomen, buttocks, or legs, which are not acne but inflamed follicles. If they don't cure automatically, then oral or external antibiotics are preferred on the medical advice.

Stages of acne

There are various terms that describe different forms of acne, such as comedones, papules, pustules, nodules, and cysts. Basically, comedones (plural for comedo) are the name given to plugged follicles: an open comedo is called a blackhead because the surface is visible and turns —black when it's exposed to air. A closed comedo is a whitehead, which is like a blackhead, but is closed at the surface. Plugged follicles can become irritated and swollen enough to burst, thus affecting surrounding tissues. If a plugged follicle erupts above the skin's surface, it becomes a pimple; when it erupts below the surface, it forms a red lump, such as a nodule or cyst. And shown in figure.2.

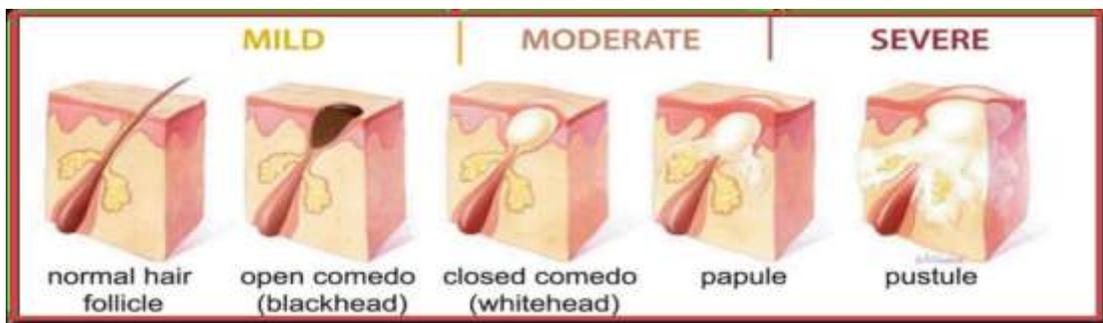


Figure .2. Diagrammatic representation of various stages of acne

In present study involves prepare different poly herbal formulations used to treat acne by using naturally available plant herbs used to prepare anti acne face wash gel .Based literature review these plants are having anti aging, anti oxidant, anti microbial and anti wrinkle properties.

MATERIALS AND METHODOLOGY

MATERIALS

Table.no.2. List of herbs can be used for formulation of herbal anti acne face wash gel

PART OF PLANT	BIOLOGICAL SOURCE AND FAMILY	USE OF PLANT
Leaves of saw palmetto	It is obtained from dried leaves of <i>Serenoa repens</i> belonging to family Areaceae.	It is used in the treatment of acne. It is used as a ant inflammation agent. It is used as a anti septic agent. It is used as a anti coagulating agent.
Dried flower petals of lotus	It is obtained from dried flower petals of <i>Nelumbo nucifera</i> belonging to the family Nelumbonaceae.	It is used as whitening agent. It is used in treatment of acne. It provides smoothening effect on skin. It produces clearance effect on skin.
Whole fruit of tomato	It is obtained from whole fruit of <i>Solanum colycospericum</i> belonging to the family Solanaceae.	It is mainly used in the acne treatment. It is used in the treatment of asthma.
Peel of banana	It is obtained from raw peel of <i>Musa acuminata</i> belonging to family musaceae.	It is mainly used in the treatment of acne. It is used in the stopping of itching. It is used to maintain the skin tone & glow of the skin.
Sago gum	It is a starch extracted from the spongy centre, or pith, of various tropical palm	Gelling agent. Gumming agent.

	stems of <i>Cycas revolute</i> belonging to the Family Cycadaceae .	
Dried leaves of tulasi	It is obtained from dried leaves of <i>Ocimum tenuiflorum</i> belonging to family Lamilaceae	It is used as anti oxidant. It is used as a anti microbial agent. It is used as anti inflammatory agent. it is used as a used a antipyretic agent.
Honey	It is produced from the bees <i>Apis mellifera</i> belongs to family fabaceae.	It is used in the treatment of acne. It is used to maintain the skin moisture. It is used as a anti bacterial and anti inflammation agents. It is used in the removal of dead skin cells & removes the black spots.
Powder of sandal wood	India: It is obtained from the trees wood from the trees of balsamifera belonging to family rutiacea.	It is used in the treatment acne. It is used as a flavoring agent.
Lemon juice	It is obtained from the lemon juice of citrus lemon belongs to family Rutaceae.	It is used in the treatment of acne. It used to enhance the skin brightness. It used as an anti ageing agent.
Whole Fruit of cucumber	It is obtained from the whole raw fruit of <i>Cucumis sativus</i> belongs to family Cucurbitaceae.	It is used to maintain the moisture content of skin.. It is used in the treatment of swelling of eyes & burns.
Guggul	It is obtained from dried oleo resin gum of <i>Commiphora wightii</i> belongs to family burseraceae.	It is used in the treatment of acne. It is used to regulate the metabolism of cholesterol It is used in the treatment of dental inflammation.
Rose water	A rose is a woody perennial flowering plant of the genus Rosa, belonging to the family Rosaceae,	It used as a Anti depressant, Anti allergic, Antiseptic and flavouring agent.
nutmeg	It is obtained from seed of <i>Myristica fragrans</i> belongs to family Myresticaceae.	It is used for treatment of nausea. It is used in the treatment of stomach pain. It is used as the anti cancer agent.

PREPARATION OF HERBAL ANTI ACNE FACE WSH GEL

Collection [11]

Flower of lotus, peel of banana, fruit of tomato, and leaves of saw palmetto collected from the local area. Resin of guggul, Fruits of Nutmeg, sago, fruit of cucumber, leaves of tulasi, and fruit of lemon purchased from the local kirana store and local vegetable market (Jaggampeta) from the local market and rosewater (DABUR Gulabari premium rose water) were purchased from the local market of Jaggampeta.

Preparation of herbal Extracts [12]

Herbal Extracts can be prepared by maceration method by using rose water used as a solvent (1:5). Flower of lotus, peel of banana, fruit of tomato, leaves of saw palmetto, were kept in hot air oven for drying purpose at 45⁰C and grinded into small pieces by using grinder. Seeds of nutmeg and guggul were crushed to make powder. Desired quantities of herbal drug were weighed and each herb macerated with rose water in conical flask. Dried herbs were allowed to mix with rose water by moderate shaking of conical flask for 3 days separately. After 3 days, contents were filtered out by using simple filtration method and filtrates were collected in vessels separately.

Filtration [13]

Filtration of extract was done by using simple filter paper and funnel for two times.

Evaporation [14]

Evaporation was done by using electronic water bath. Filtrates were allowed to evaporate in evaporating pan at 60⁰C temperature until the desired concentration of the extract was obtained.

Development of Formulation [15]

Various formulation batches were prepared according to the Table 3. The desired quantity of gelling agent i.e. sago gum was weighed accurately and dispersed in hot rose water (not more than 60⁰C; 50 % weight of the batch size) with moderate stirring, avoiding air entrapment and allowed to soak overnight. Desired quantity of lemon juice was dissolved in desired amount of honey by gentle stirring. Desired quantity of concentrated herbal extracts were added to the remaining amount of rose water and mixed with above honey mixture by gentle stirring. This was finally mixed with previously soaked gel formulation. Prepared formulations were filled in a suitable container and labeled accordingly.

Table no .3.List of ingredients used in formulation of poly herbal anti Acne face wash

Formula code	F1	F2	F3	F4
Saw palmetto	1gm			
Lotus		1gm		
Tomato			1gm	
Banana				1gm
Sago gum	0.5%	0.5%	0.5%	0.5%
Tulasi	0.2ml	0.2ml	0.2ml	0.2ml
Honey	0.2ml	0.2ml	0.2ml	0.2ml
Sandalwood	0.2ml	0.2ml	0.2ml	0.2ml
Lemon juice	0.2ml	0.2ml	0.2ml	0.2ml
Guggul	0.2ml	0.2ml	0.2ml	0.2ml
Cucumber	0.2ml	0.2ml	0.2ml	0.2ml
Nutmeg	0.2ml	0.2ml	0.2ml	0.2ml
Rose water	Up to 10ml	Up to 10ml	Up to 10ml	Up to 10ml

Evaluation Tests

The prepared formulations evaluated for following tests and compared with marketed ayush herbal face wash (lever ayush anti pimple turmeric face wash).

Physical appearance [16] the physical appearance of the formulation was checked visually which comprised.

Color: [17] The color of the formulations was checked out against white background.

Odor [18] The odor of the face washes were checked by manually.

Consistency [19] The consistency was checked by applying on skin.

Greasiness [20] the greasiness was assessed by the application onto the skin.

pH [21] An amount of 20 mg of the formulation was taken in a beaker and was subjected to the pH measurement using a digital pH meter within 24 hrs of manufacture.

Wash ability [22] Formulations were applied on the skin & then ease & extent of washing with water were checked manually

Homogeneity [23] Homogeneity was tested by visual inspection after allowing them to set in a container. They are evaluated for their appearance and presence of aggregates.

Grittiness [24] The formulations were evaluated microscopically under 40 x magnifications for the presence of any particulate matter or aggregates.

Viscosity [25] Viscosities of formulated gels were determined using Brookfield viscometer spindle # 7 at 50 rpm and 25°C. The corresponding dial reading on the viscometer was noted. Then the spindle was lowered successively. The dial reading was multiplied by the factor mentioned in catalog.

Extrudability [26] Extrudability is defined as the weight in grams required for extruding 0.5 cm long ribbon of formulation in 10 seconds. The gel formulation was filled in a standard capped collapsible aluminum tubes and sealed by crimping to the end. The tubes were placed between two slides and were clamped. 500 g weight was placed over the slides, and then the cap was removed. The length of the ribbon of the formulation that came out in 10 seconds was recorded.

Spreadability [26] Spreadability denotes the extent of area to which a gel readily spreads on the application to the skin or affected part. The bioavailability efficiency of the gel also depends on Spreadability value. Spreadability is defined in terms of time in seconds required taken by the upper slide to slip off the gel placed between the two slides, under certain load. The lesser the time taken for the separation of two slides, the better the spreadability. An amount of 500 mg of the formulation was sandwiched between the two slides, each with dimensions of 6 cm × 2 cm. A weight of 100 g was placed upon the upper slide so that the formulation between the two slides get pressured uniformly to form a thin layer. The weight was removed, and the excess of the formulation adhering to the slides was scrapped off. The lower slide was fixed on the board of apparatus, and the upper slide was held to the non-flexible string to which 20g load was applied with the help of a simple pulley which was in horizontal level with the fixed slide. The time taken by the upper slide to slip off the lower slide was noted.

$$\text{Spreadability} = m \times l/t$$

Where m=Weight tied to upper slide, l=Length of the glass slide (6 cm), t=Time in seconds.

Skin irritancy test [29] This test was performed on 10 healthy human volunteers of either sex after obtaining consent for the same. About 0.5 Gms. of gel was applied to an area of about 6cm² on skin of hand covered with a gauze patch. The patch was held in contact with the skin by means of a semi- occlusive dressing for an hr. At the conclusion of exposure period of 1 hr, the gauze was removed and residual test substance was scrapped, without altering the existing response or integrity of the epidermis. The skin was observed at 1 hr, 6 hrs, 12 hrs, 24 hrs, 48 hrs and 72 hrs. for any visible response on the skin.

Stability studies [27]

The physical stability of the formulations was studied by placing in plastic containers and they were placed in a humidity chamber at 45⁰C and 75% relative humidity. There appearance and physical stability were inspected per a period of 3 months at interval of one month.

RESULTS AND DISCUSSION

Organoleptic parameters

The prepared acne face wash gel was evaluated for its appearance, color and odor. It produces characteristic sandal odor. The results are shown in table no.4.

Table. no.4: Results for organoleptic properties of formulations

Formulation code	Odor	Color
Marketed (Ayush herbal anti acne face wash)	Sandal	Cream color
F1-Saw palmetto	Sandal	Cream color
F2-lotus	Sandal	Cream color
F3-tomato	Sandal	Light yellow color
F4-banana	Sandal	Yellowish color

Consistency

The prepared formulations produces semisolid consistency .This was confirmed by visual observation. The results are shown in table no.5.

Table. no.5: Results for Consistency of formulations

Formulation code	Consistency
Marketed (Ayush herbal anti acne face wash)	Semi solid
F1-Saw palmetto	Semi solid
F2-lotus	Semi solid
F3-tomato	Semi solid
F4-banana	Semi solid

Greasiness

The prepared formulations are does not greasiness upon application on the skin. The results are shown in table no.6.

Table. no.6: Results for greasiness properties of formulations

Formulation Code	Greasiness
Marketed (Ayush herbal anti acne face wash)	No
F1-Saw palmetto	No
F2-lotus	No
F3-tomato	No
F4-banana	No

pH

The pH of formulation was found to be satisfactory and in the range of 5.5-5.7. It is near to the skin pH which indicates that the prepared formulation can be compatible with skin. The results are shown in table no.7.

Table. no.7: Results for pH of formulations

Formulation Code	pH
Marketed (Ayush herbal anti acne face wash)	5.8
F1-Saw palmetto	5.5
F2-lotus	5.6
F3-tomato	5.5
F4-banana	5.7

Wash ability

Prepared formulations were easily washed with water. The results are shown in table no.8.

Table. no.8: Results for wash ability properties of formulations

Formulation Code	Wash ability
Marketed (Ayush herbal anti acne face wash)	Good
F1-Saw palmetto	Good
F2-lotus	Good
F3-tomato	Good
F4-banana	Good

Homogeneity

Under visual inspection of the prepared formulation indicated no lumps and to have uniform color dispersion, free from any fiber and particle. The results are shown in table no.9.

Table. no.9: Results for homogeneity of formulations

Formulation Code	Homogeneity
Marketed (Ayush herbal anti acne face wash)	No aggregate
F1-Saw palmitto	No aggregate
F2-lotus	No aggregate
F3-tomato	No aggregate
F4-banana	No aggregate

Grittiness

The prepared formulation are shows no grittiness. The results are shown in table no.10.

Table. no.10: Results for grittiness properties of formulations

Formulation Code	Grittiness
Marketed (Ayush herbal anti acne face wash)	No
F1-Saw palmetto	No
F2-lotus	No
F3-tomato	No
F4-banana	No

Viscosity

Brookfield viscometer was used to measure the viscosity of gel. Viscosity of the formulations in the range of 4.702-5.829. The results are shown in table no.11.

Table. no.11: Results for Viscosity of formulations

Formulation Code	Viscosity(POISE)
Marketed (Ayush herbal anti acne face wash)	6.231
F1-Saw palmetto	5.724
F2-lotus	5.829
F3-tomato	4.702
F4-banana	4.709

Extrudability

The prepared formulations show that good extrudability. The results are shown in table no.12.

Table. no.12: Results for extrudability properties of formulations

Formulation code	Extrudability
Marketed (Ayush herbal anti acne face wash)	Good
F1-Saw palmitto	Good
F2-lotus	Good
F3-tomato	Good
F4-banana	Good

Spreadability

The spreadability studies showed that all formulations have better spreadability when compared to marketed formulations and in the range of 8.982-9.983.

Table. no.13: Results for spreadability properties of formulations

Formulation Code	Spreadability (gm-cm/sec)
Marketed (Ayush herbal anti acne face wash)	10.23
F1-Saw palmetto	9.782
F2-lotus	9.983
F3-tomato	8.982
F4-banana	8.986

Skin Irritability test

Small amount of the gel was applied on the skin and kept for few minutes and found to show no redness, edema, Inflammation and irritation during irritancy studies. This formulation is safe to use for skin.

Table. no.14: Results for skin irritation test of formulations

Formulation Code	Irritability test				
	1 st hour	6 th hour	12 th hour	1day	2days
Ayush herbal anti acne face wash	No	No	No	No	No
F1-Saw palmetto	No	No	No	No	No
F2-lotus	No	No	No	No	No
F3-tomato	No	No	No	No	No
F4-banana	No	No	No	No	No

Among the above parameters **F2** formulation shows similar results to marketed formulations.

Stability studies

During stability studies F2 formulation produces good results during 3 months and the results are shown in the table no.15.

Table no: 15.results for stability studies

Parameter	F2 lotus	F2 lotus	F2 lotus	F3 tomato
	Initial	1 st Month	2 nd Month	3 rd Month
Color	Cream color	Cream color	Cream color	Light cream color
Odor	sandal	sandal	sandal	Sandal
PH	5.61	5.60	5.59	5.58
Spreadability(gm-cm/sec)	9.983	9.543	9.432	9.440
Viscosity(poise)	5.829	5.850	5.752	5.689
Skin irritation test	No	No	No	No

CONCLUSION

The world market is also moving towards poly herbal medicines for health care, health and for cosmetics purposes including dermal preparations like face washes gels anti acne preparations etc. A survey of global skin care market trends indicates that consumer use of herbal products has significantly increased over the past years. In the present study, an attempt was made to formulate poly herbal anti acne face wash gel using different natural ingredients like saw palmetto, lotus, tomato, banana, and to evaluate the prepared formulations for the desired parameters. Prepared formulations polymers were evaluated for physical parameters like color, odor, grittiness, greasiness, PH, viscosity, consistency, spreability, wash ability, skin irritation test and stability studies. Sago gum produces desired gel strength to formulations. Honey produces humectants activity during stability studies. These preparations are having good spread ability results .It indicates easy apply on the skin. When compared to marketed ayush herbal anti acne face wash **F2** containing **LOTUS (*nelumbo nucifera*)** flower petal extracts formulations produces desired characteristics. Based on the results we conclude our work that the herbal gel prepared with using lotus and sago gum was found with acceptable properties than the others.

ACKNOWLEDGEMENT

The presenting authors are thankful to management and principal of Adarsa College of pharmacy, G.Kothapalli for their valuable support in carrying out this work.

REFERENCE

1. Chambers HF, Deleo FR waves of resistance : staphylococcus aureus in the antibiotic era. *Rev Microbiol*, 2009, 7 (9) : 629-641.
2. Chaudhary S , anti acne activity of some Indian Antiacne herbal drugs , international journal of pharma professional” s research, (2010) 1 (1) :78-80.
3. White GM., Recent findings in the epidemiologic evidence, classification, and subtypes of acne vulgaris, *J Am Acad Dermatol*, 1998; 39:2 pt 3: S34-S37.
4. J. Rao, MD, FRCPC. Combination Therapy for Acne Vulgaris. Division of Dermatology and Cutaneous Sciences, University of Alberta, Edmonton, Canada).
5. Amichai B., Shemer A., Grunwald MH, Low-dose isotretinoin in the treatment of acne vulgaris, *J Am Acad Dermatol*, 2006; 54:4: 644-646.
6. James WD, Clinical practice. Acne, *N Engl J Med*, 2005; 352:14: 1463- 1472.
7. Magin P., Pond D., Smith W., Watson A, A systematic review of the evidence for „myths and misconceptions“ in acne management: diet, face washing and sunlight, *FamPract*, 2005; 22:1: 62-70.
8. Son BK, Yun Y., Choi IH, Efficacy of ah shi point acupuncture on acne vulgaris, *Acupunct Med*, 2010; 28:3: 126-129.
9. Enshaieh S., Jooya A., Siadat AH., Iraj F, The efficacy of 5% topical tea tree oil gel in mild to moderate acne vulgaris: a randomized, double-blind placebo controlled study, *Indian J Dermatol Venereol Leprol*, 2007; 73:1: 22-25.
10. Goulden V, McGeown CH, Cunliffe WJ. The familial risk of adult acne: a comparison between first-degree relatives of affected and unaffected individuals. *Br J Dermatol*. Aug 1999; 141(2):297-300.
11. Pochi PE; The pathogenesis and treatment of acne. *Ann Rev Med* 1990; 41: 187-98.
12. Singh H.P., Samnhotra N., Gullaiya S., Kaur I., “Anti-acne synergistic Herbal face wash gel Formulation, Evaluation, & Stability study”, *World Journal of Pharmaceutical Research*, 2015; 4(9): 1261-1273.
13. Kanlayavattanakul M., Lourith N., “Therapeutic agents & herbs in topical applications for acne treatment”, *International Journal of cosmetic Science*, 2011; 33: 289-297.
14. Kapoor V.P., Joshi H., Chaubey M., “Applications of seed gums in pharmaceutical formulations”, *J Med Arom Plant Sci.*, 2000, 22/4A & 23/1A, 42-44.
15. Kubo I., Muroi H., Kubo A., “Naturally occurring anti-acne agents”, *J Nat Prod*, 1994; 57(1): 9-17.
16. V. V. Paithankar, Formulation and evaluation of herbal cosmetic preparation using safed musli. *International Journal of PharmTech Research*, 2 (4): 2261-2264, (2010).
17. Kubo I., Muroi H., Kubo A., “Naturally occurring anti-acne agents”, *J Nat Prod*, 1994; 57(1): 9-17.
17. Mandeep Singh , Preparation and evaluation of herbal cosmetic cream; *Pharmacology online*. 2011, 2,

17. Ashish Aswal, Mohini Kalra and Abhiram Rout; Preparation and evaluation of polyherbal cosmetic cream; *Der Pharmacia Lettre*, 2013; 5(1): 83-88.
18. Panigrahi L, Ghosal SK, Pattnaik S, Maharana L, Barik BB; Effect of permeation enhancers on the Release and permeation kinetics of Lincomycin Hydrochloride gel formulations through Mouse skin. *Indian J Pharm Sci.*, 2006; 205-211.
19. Ashishaswal, Mohinikalra and Abhiram Raot, Preparation and evaluation of polyherbal cosmetic cream, *Scholars Research library*, 2013, 5(1), 83-88.
- 20.. Kausik Biswas, Ishita Chattopadhyay, Ranajit K. Banerjee and Uday Bandyopadhyay, Biological activities and medicinal properties of neem (*Azadirachta indica*). *Current Science*, 2002,82: 1336-1345.
22. Mika Korhonen, Rheological properties of pharmaceutical creams containing sorbitan fatty acid estersurfactants, 2014, 16-22
23. Singh H.P., Samnhotra N., Gullaiya S., Kaur I., "Anti-acne synergistic Herbal face wash gel Formulation, Evaluation, & Stability study", *World Journal of Pharmaceutical Research*, 2015; 4(9): 1261-1273.
24. Mohammad IT, Nair RH, Susan C, Chrisita A. Rheological characterization of topical carbomer gels neutralized to different pH. *Pharm Res* 2004;21:1192-9.
25. Jawaid Talha, Gupta Rol and Siddiqui Zohaib Ahmed, A review on herbal plants showing antidepressant activity. *International Journal of Pharmaceutical Science and Research*, 2011,2: 3051-3060,
26. Cunliffe WJ, Goulden V. Phototherapy and acne vulgaris. *Br J Dermatol.* 2000;142:855–6.
27. Itoh Y, Ninomiya Y, Tajima S, Ishibashi A. Photodynamic therapy of acne vulgaris with topical delta-aminolaevulinic acid and incoherent light in Japanese patients. *Br J Dermatol.* 2001;144:575–9.