ST. JOSEPH'S COLLEGE OF PHARMACY CHERTHALA

Record Book

BACHELOR OF PHARMACY

SIXTH SEMESTER

HERBAL DRUG TECHNOLOGY

Name……
Roll No……
Reg.No……

ST. JOSEPH'S COLLEGE OF PHARMACY

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KERALA, INDIA

BACHELOR OF PHARMACY

SIXTH SEMESTER

HERBAL DRUG TECHNOLOGY

PRACTICAL RECORD

NAME……

REG.NO……

Certified that this is a bonafide record of the practical work done by the candidate during the period 20….

PRINCIPAL/HOD **FACULTY IN-CHARGE**

External Examiner **Internal Examiner**

Date……. Date……

INDEX

Sl. No.	Name of Experiments	Date	Page No	Marks (10)
	INTRODUCTION			
	DETERMINATION OF ASH VALUES			
1	Determination of Total Ash Value			
2	Determination of Acid insoluble Ash Value			
3	Determination of Water soluble Ash Value			
	SWELLING INDEX			
4	Determination of Swelling Index			
	FOAMING INDEX			
5	Determination of Foaming index			
6	Determination of Extractive Values			
7	Determination of Moisture Content			
	ANALYSIS OF FIXED OILS			
8	Determination of acid value			
9	Determination of saponification value			
10	Determination of ester value			
	HERBAL COSMETICS			
11	Preparation of Herbal Cold Cream			
12	Preparation of Herbal Face Pack			

13	Preparation of Lemon Hand Lotion			
14	Preparation of Henna Hair oil			
15	Determination of alcohol content of Arishta			
16	Determination of alcohol content of Asava			
17	Phytochemical screening of herbal drug			
18	Monograph analysis of herbal drug			
19	Formulation and standardization of Triphala churna			

DETERMINATION OF ASH VALUE

ASH VALUES

- Used to determine quality and purity of a crude drug and to establish the identity of it.
- Ash contains inorganic radicals like phosphates, carbonates and silicates of sodium, potassium, magnesium, calcium etc. these are present in definite amount in a particular crude drug hence, quantitative determination in terms of various ash values helps in their standardization.
- Used to determine foreign inorganic matter present as an impurity
- The ash remaining following ignition of herbal materials is determined by three different methods which measure total ash, acid-insoluble ash and water-soluble ash.

TOTAL ASH VALUE

It is the total amount of material remaining after ignition. This includes both **"physiological ash"**, which is derived from the plant tissue itself, and "**non-physiological**" ash, which is the residue of the extraneous matter (e.g. sand and soil) adhering to the plant surface.

ACID-INSOLUBLE ASH VALUE

The residue obtained after boiling the total ash with dilute hydrochloric acid, and igniting the remaining insoluble matter. This measures the amount of silica present, especially as sand and siliceous earth.

Sometimes, inorganic variables like calcium oxalate, silica, carbonate content of the crude drug affects" total ash value". Such variables are removed by treating with acid (as they are insoluble in hydrochloric acid) and acid insoluble ash value is determined.e.g. Rhubarb, liquorice etc.

WATER-SOLUBLE ASH VALUE

Water-soluble ash is the difference in weight between the total ash and the residue after treatment of the total ash with water.

Expt no:

Date:

DETERMINATION OF TOTAL ASH VALUE

Aim: To determine the Total ash value of Digitalis leaf

Requirements: Silica crucible, powdered Digitalis leaf

Principle:

The ash of any organic material is composed of their non-volatile inorganic components. Controlled incineration of crude drugs results in an ash residue consisting of an inorganic material (metallic salts and silica). This value varies within fairly wide limits and is therefore an important parameter for the purpose of evaluation of crude drugs.

The determination of ash is useful for detecting low-grade products, exhausted drugs and excess of sandy or earthy matter. More direct contamination, such as by sand or earth, is easily detected by the ash value. Different types of ash values are used in detection of crude drugs like total ash, acid insoluble ash, water-soluble ash and sulphated ash

Total ash is designed to measure the total amount of ash produced after complete incineration of the ground drug at a temperature (less than 450^{o}C) to remove all the carbons. The total ash usually consists of carbonates, phosphates, silicates and silica which include both physiological (derived from plant tissue itself) and non-physiological ash (it is the residue of the adhering material to the plant surface e.g. Sand and soil)

Procedure:

Place about 2-3 g of the ground material, accurately weighed, or the quantity specified in the monograph, in a suitable tared dish (for example, of silica or platinum), previously ignited, cooled and weighed. Incinerate the material by gradually increasing the heat, not exceeding 450 °C, until free from carbon; cool, and weigh. If a carbon-free ash cannot be obtained in this way, exhaust the charred mass with hot water, collect the residue on an ashless filter-paper, incinerate the residue and filter-paper, add the filtrate, evaporate to dryness, and ignite at a temperature not exceeding 450 °C. Calculate the content in mg of ash per g of air-dried material.

If carbon-free ash cannot be obtained in this manner, cool the crucible and moisten the residue with about 2 ml of water or a saturated solution of ammonium nitrate R. Dry on a water-

bath, then on a hot-plate and ignite to constant weight. Allow the residue to cool in a suitable desiccator for 30 minutes, and then weigh without delay. Calculate the content of total ash in mg per g of air-dried material.

Report:

Total Ash value of the given sample was found to be

Reference:

1. Indian pharmacopoeia 2007, Vol I, 78
2. Practical pharmacognosy by Dr. Madhu C Divakar, 4th edition, 123-124
3. Text book of Pharmacognosy and phytochemistry- Biren shah & A.K. Seth; Elsever publications, First edition,113

Expt no:
Date:

DETERMINATION OF ACID-INSOLUBLE ASH VALUE

AIM: To determine the acid insoluble ash value of the given sample

PROCEDURE

- Transfer the crucible containing the total ash into a 100 ml beaker; add 25 ml of dilute hydrochloric acid.
- Place mere gauze over a Bunsen burner and boil gently for 5 minutes.
- Collect the insoluble matter on an ashless filter-paper and wash with hot water until the filtrate is neutral.
- Ignite a crucible in the flame, cool and weigh.
- Transfer the filter-paper containing the insoluble matter to the weighed empty crucible, ignite to constant weight.
- Allow the residue to cool in a suitable desiccator for 30 minutes, then weigh without delay.
- Calculate the content of acid-insoluble ash with reference to the air dried sample of the crude drug.

Report:

Acid insoluble ash value of the given sample was found to be

Expt no:
Date:

DETERMINATION OF WATER SOLUBLE ASH VALUE

AIM: To determine the water soluble ash value of the given sample

PROCEDURE

1. To the crucible containing the total ash, add 25 ml of water and boil for 5 minutes.
2. Collect the insoluble matter in a sintered-glass crucible or on an ashless filter paper.
3. Wash with hot water and ignite in a crucible for 15 minutes at a temperature not exceeding 450 °C.
4. Subtract the weight of this residue in mg from the weight of total ash.
5. Calculate the content of water-soluble ash in mg per g of air-dried material.

Report:

Water soluble ash value of the given sample was found to be

SWELLING INDEX

Many herbal materials are of specific therapeutic or pharmaceutical utility because of their swelling properties − especially gums and those containing an appreciable amount of mucilage, pectin or hemicellulose.

The swelling index means volume in ml occupied by 1 g of swollen material under specified conditions.

Its determination is based on the addition of water or a swelling agent as specified in the test procedure for each individual herbal material (either whole, cut or pulverized). Using a glass-stoppered measuring cylinder, the material is shaken repeatedly for 1 hour and then allowed to stand for a required period of time. The volume of the mixture (in ml) is then read. The mixing of whole herbal material with the swelling agent is easy to achieve, but cut or pulverized material requires vigorous shaking at specified intervals to ensure even distribution of the material in the swelling agent.

Note: Swelling index of Isapgol seeds is not less than 10 ml

Expt no:

Date:

DETERMINATION OF SWELLING INDEX OF ISAPGOL SEEDS

AIM: To determine the swelling index of the given sample

PROCEDURE

1. Take 1 g of the seeds into a 25-ml glass-stoppered measuring cylinder.
2. Add 25 ml of water and shake the mixture thoroughly every 10 minutes for 1 hour.
3. Allow to stand for 3 hours at room temperature, or as specified.
4. Measure the volume in ml occupied by the swollen seeds.
5. Calculate the mean value of the individual determinations, related to 1 g of herbal material.

RESULT

Swelling index of Isapgol seeds was found to be…….

REFERENCE:

1. Quality control methods for medicinal plants material by W.H.O. Guidelines : 34
2. Study of crude drugs by M A Iyengar, page number 71.
3. Dr Pulok mukherji: Quality control of herbal drugs: Page no:214

FOAMING INDEX

Many herbal materials contain saponins that can cause persistent foam when an aqueous decoction is shaken. The foaming ability of an aqueous decoction of herbal materials and their extracts is measured in terms of a foaming index.

ASSESSMENT:

If the height of the foam in every tube is less than 1 cm, the foaming index is less than 100. If a height of foam of 1 cm is measured in any tube, the volume of the herbal material decoction in this tube (a) is used to determine the index. If this tube is the first or second tube in a series, prepare an intermediate dilution in a similar manner to obtain a more precise result.

If the height of the foam is more than 1 cm in every tube, the foaming index is over 1000. In this case repeat the determination using a new series of dilutions of the decoction in order to obtain a result.

Calculate the foaming index using the following formula:

$$\text{FOAMING INDEX} = 1000/a$$

Where a = the volume in ml of the decoction used for preparing the dilution in the tube where foaming to a height of 1 cm is observed.

Exp no:
Date:

DETERMINATION OF FOAMING INDEX

AIM: To determine the foaming index of the given sample

PROCEDURE

1. Take 1 g of coarse powder of the herbal material in a 500-ml conical flask.
2. Add 100 ml of boiling water and Maintain at moderate boiling for 30 minutes.
3. Cool and filter into a 100-ml volumetric flask and add sufficient water through the filter to dilute to volume.
4. Pour the decoction into 10 stoppered test-tubes (height 16 cm, diameter 16 mm) in successive portions of 1 ml, 2 ml, 3 ml, etc. up to 10 ml.
5. Adjust the volume of the liquid in each tube with water to 10 ml. Stopper the tubes and shake them in a lengthwise motion for 15 seconds, two shakes per second.
6. Allow to stand for 15 minutes and measure the height of the foam.

RESULT

Foaming index of the given sample was found to be……

REFERENCE

1. Quality control methods for medicinal plants material by W.H.O. Guidelines : 45.
2. Dr Pulok mukherji: Quality control of herbal drugs: Page no:214

Expt no:
Date:

DETERMINATION OF EXTRACTIVE VALUES OF CRUDE DRUGS

Aim: to determine the alcohol soluble and water soluble extractive value

Requirements: alcohol (90%), distilled water, stoppered flask, china dish.

Principle:

The extracts obtained by exhausting crude drugs with different solvents are approximate measure of their chemical constituents. Various solvents are used according to the type of the constituents to be analyzed.

- **Water soluble extractive value:** It plays an important role for the evaluation of crude drugs. Water soluble extractives are applied to drugs containing water-soluble active constituents such as tannins, sugars, plant acids, mucilage, glycosides etc.
- **Alcohol soluble extractive value:** Alcohol soluble extractives are applied to drugs containing alcohol soluble active constituents such as lignans, alkaloids etc.

The extractive values are useful to evaluate the chemical constituents present in the crude drug and also help in estimation of specific constituents soluble in a particular solvent.

Procedure:

Water soluble extractive value

The air dried, coarsely powdered Lobelia plant (5gm) was macerated with 100ml of chloroform water in a stoppered conical flask for 24hrs, shaken frequently and allowed to stand for 18hrs. This extract was filtered and filtrate was collected; 25ml of the filtrate was transferred to an evaporating dish of known weight. Then it was dried in an oven at 105^0C, cooled and dried. The percentage w/w of alcohol soluble extractive value was calculated with reference to air dried drug.

Alcohol soluble extractive value

The air dried, coarsely powdered Lobelia plant (5gm) was macerated with 100ml of 95%alcohol in a stoppered conical flask for 24hrs, shaken frequently and allowed to stand for 18hrs. This extract was filtered rapidly taking precautions against loss of alcohol into a 50ml glass beaker. The filtrate was collected; 25ml of the filtrate was transferred to an evaporating

dish of known weight. Then it was dried in an oven at 105^0C, cooled and dried. The percentage w/w of alcohol soluble extractive value was calculated with reference to air dried drug.

Report:

Alcohol soluble extractive value of Lobelia powder was found to be

Water soluble extractive value of Lobelia powder was found to be

Reference:

1. Indian pharmacopoeia- 2007, Vol.I, 191
2. Practical pharmacognosy by Dr. Madhu C Divakar, 4th edition, 124-5
3. Text book of Pharmacognosy and phytochemistry- Biren shah & A.K. Seth; Elsever publications, First edition,113

Exp.no :

Date

DETERMINATION OF MOISTURE CONTENT

Aim:

To determine the moisture content of crude drug

Requirements:

Powder of crude drugs, porcelain dish

Principle

A crude drug can be evaluated by morphological, microscopic, physical, chemical or biological methods. Physical evaluation involves the determination of physical standard such as loss on drying, melting point, viscosity, refractive index, ash values and extractive values.

The percentage of active constituents present in crude drug is always mentioned on an air dried basis. However every crude drug contained certain percentage of moisture which should be controlled and determined. The moisture content of drug should be minimized in order to prevent the decomposition of crude drugs either due to chemical change or by microbial contamination. The moisture content is usually determined by heating the drug at 105^{o} C in an oven for one hour to constant weight. For drugs containing volatile constituents, toluene distillation method is used. Moisture content is strictly controlled for certain drugs like digitalis (not more than 5 %) and is an important physical parameter in their evaluation.

Procedure

- Weigh about 0.5g of the powdered drug into a weighed flat and thin porcelain dish
- Dry in the oven at 105ºC until the two consecutive weighing do not differ more than 0.05mg
- Cool in the desiccators and weigh . The loss of weight is usually recorded as moisture
- This was repeated till constant weight was obtained and percentage loss on drying was calculated with reference to the air dried drug

$$\text{Percentage loss on drying} = \frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$$

REPORT:

The percentage loss on drying for the given powder sample was found to be ……

REFERENCE:

1. Quality control methods for medicinal plants material by W.H.O. Guidelines : 45.
2. Dr Pulok mukherji: Quality control of herbal drugs: Page no:193

ANALYSIS OF FIXED OILS

Exp No:

Date:

DETERMINATION OF ACID VALUE

Aim:

To determine the Acid value of the given sample

Requirements:

- Chemicals: Vegetable oil, Ethanol (95 %), Ether, Phenolphthalein, 0.1M Potassium hydroxide.
- Apparatus: Burette, Funnel, Measuring Cylinder, reflux condenser, Burette stand.

Principle:

The acid value is the number of which expresses in mg of the amount of potassium hydroxide necessary to neutralize the free acids present in 1 g of the substance.

The acid value is one of the chemical methods of analysis to perform on lipid in order to determine the amount of free acid present in the sample. It is applied in standardization of vegetable and medicinal oil in order to identify the standard and adulteration upon comparison with pharmacopoeia standard. Generally fixed oil consists of 70-90% of fatty acid in the form of ester as triglycerides and negligible amount of free fatty acid. Hence the higher acid value indicates the presence of more number of fatty acid and to declare the oil is impure or underwent hydrolytic oxidation that resulted the excess free fatty acids to give higher acid value.

The acid value determination is based upon the direct acid base titration in which the known quantity of oil is titrated against 0.1 M aqueous KOH in a suitable solvent like ethanol and ether using phenolphthalein as an indicator. Heating may be aided to enhance complete extraction of free fatty acids for than applied for that applied for solid fats.

Procedure:

Weigh accurately about 10 g of the substance dissolve in 50 ml of a mixture of equal volumes of ethanol (95 per cent) and ether, previously neutralized with 0.1 M potassium

hydroxide to phenolphthalein solution.If the sample does not dissolve in the cold solvent,connect the flask with a reflux condenser and warm slowly, with frequent shaking, until the sample dissolves.

Add 1 ml of phenolphthalein solution and titrate with 0.1 M potassium hydroxideuntil the solution remains faintly pink after shaking for 30 seconds. Calculate the acid value from the expression

$$\text{Acid value} = 5.61\ n/w$$

Where, n = the number of ml of 0.1 M potassium hydroxide required;
w = the weight, in g, of the substance.

Report:

References:

1. The Indian Pharmacopoeia 2010, Volume I, Page No: 84
2. Natural Products Practical Manual by Praveen Kumar Page No: 99-100

ExpNo:

Date:

DETERMINATION OF SAPONIFICATION VALUE

Aim:

To determine the Saponification value of the given sample

Requirements:

- Chemicals: Vegetable oil, 0.5M Ethanolic potassium hydroxide, Phenolphthalein, 0.5 M Hydrochloric acid.
- Apparatus: Burette, Funnel, Reflux condenser, Water-bath, Burette stand.

Principle:

The saponification value is the number of milligrams of potassium hydroxide necessary to neutralise the free acids and to saponify the esters present in 1 g of the substance. The fat or fixed oil consists of free fatty acids and triglycerides of fatty acid which allow to undergo soap formation under endothermic conditions. In excess amount of alkali and the unreacted alkali is back titrated with equivalent strength.

The determination of saponification number is used as an aid in the detection of triglycerides of acids containing less than 16 or more than 18 carbon atom because the value of constant is inversely proportional to the molecular weight of acids present. It is also helps in determination of adulteration either it is mineral oil or fixed oil.

The determination of saponification value is based upon back titration of acid- base in which the excess alkali is being titrated with equal strength acid. The back titration is performed to find out the amount of alkali that is neutralized by fatty acids and its esters.

Procedure:

Weigh accurately about 2 g of the substance into a 200-ml flask of borosilicate glass fitted with a reflux condenser. Add 25.0 ml of 0.5M ethanolic potassium hydroxide and a little pumice powder and boil under reflux on a water-bath for 30 minutes. Add 1 ml of phenolphthalein solution and titrate immediately with 0.5 M hydrochloric acid (a ml). Carry out a blank titration omitting the substance under examination (b ml).

Calculate the saponification value from the expression.

$$\text{Saponification value} = 28.05\ (b - a)/w$$

Where,

w= weight, in g, of the substance.

Report:

References:

1. The Indian Pharmacopoeia of Volume I, Page No: 93
2. Natural Products Practical Manual by Praveen Kumar Page No: 95-96

Exp No:

Date:

DETERMINATION OF ESTER VALUE

Aim:

To determine the ester value of given sample

Principle:

The ester value is the number of milligrams of potassium hydroxide required to saponify the esters present in 1 g of the substance.

Ester value is the difference between saponification value and acid value. The saponification value is defined as the number of miiligrams of potassium hydroxide required to neutralise the free fatty acid and to saponify the ester present in the gram of substances (fat or oil). Acid value can be determined by dissolving weighed amount of substance which heated by equal volume of ethanol and 95% ethanol which is previously neutralized with potassium hydroxide to phenolphthalein and titrated with 0.1M potassium hydroxide until the solution becomes faintly pink colour, shaking for 30 minutes using phenolphthalein as indicator.

Procedure:

Calculated the acid value and saponification value of given substances. After that calculated the ester value using the formula,

Ester value = Saponification value - Acid value

Report:

Reference:

1. Indian pharmacopoeia ;Volume I; 2010; Page No: 85
2. Organic chemistry of natural products; Volume I; 35th edition; O.P AgarwalPage No: 310.

HERBAL COSMETICS

INTRODUCTION

Natural ingredients have in personal and health care products for many centuries. Modern research proves that herbs are effective and also mild and soothing. Potent synthetic preparation and chemicals through effective constituents a toxic burden on the human body. Herbal cosmetic are mild and effective. Moreover, they are inexpensive and easily available. The most common application of herbs in cosmetics is in the preparation of skin and hairs are cosmetics as well as dentifrices.

Various ingredients are used in cosmetics are derived from plant parts. These include dreid plant materials in powder form, pure compounds isolated from plants fresh herbs, galenicals, unorganized drugs such as resins, gum, essential oils and fixed oils and certain standardized extracts with a known concentration of actives.

Herbs can also be used as food supplements or in cooking. These herbs will make your food healthier. Plus, they also help maintain your diet, simultaneously helping you maintain a healthier body.

On the other hand, the market is flooded with diet pills containing 'herbals' that claim to be effective in weight-loss.

Herbal cosmetics

Herbal cosmetic are defined as beauty product obtained from natural sources with deirable physiological activities such as skin healing, smoothening and appearances enhancing and conditioning properties.

Herbal cosmetics contain product that can repair revitalize and protect the skin and prevent hair fall and promote the hair growth. Perfumes, soap and powders used for protective and cleansing action are also cosmetics.

Cosmetic are have many uses

- They are used in personal care products to keep the body clean and odour- free.
- They are used as perfumes in the form of oils and extracts.
- They are used as enhance appearance and thereby improve self –esteem.

ExpNo:

Date:

HERBAL COLD CREAM

Aim:

To prepare the Herbaceous Formulation of cold cream

Formula: (100 g)

Sl.No	Name of the ingredients	**Quantity** mg/gm/Kg (or) ml/L
1.	Bees wax	25.00gm
2.	Neem oil	35.50gm
3.	Rose water	38.00 ml
4.	Borax	1.50gm

Principle:

Cold cream is a water-in-oil emulsion. It is useful as an emollient, cleansing cream and ointment base. It resembles "Rose water ointment, differing only in that mineral oil is used in place of almond oil and omitting the fragrance. This change produces an ointment base which is not subjected to rancidity like one containing a vegetable oil.

Procedure:

- Reduce size of bees wax in small pieces.
- Melt them on a steam bath with neem oil and continue heating until the temperature of the mixture reaches 70^0C
- Dissolve the borax in rose water and heat at 70^0C in separate flask.
- Gradually add Rose water to the mixture of oily phase with continuous and rapid stirring until it has congealed.
-

Uses:

Emollient and cleansing cream

Report:

References:

1. Text book of "Industrial Pharmacognosy" by kalia Page No: 251
2. Practical pharmaceutics by R.S Gaud, G,D Gupta Page No: 32

ExpNo:

Date:

FACE PACK OR MASK

Aim:

To prepare the Herbaceous Formulation of Face pack or mask

Formula: (36gm)

Sl.No	Name of the ingredients	**Quantity** mg/gm/Kg (or) ml/L
1.	Honey	15.00gm
2.	Olive oil	3.00 ml
3.	Rose water	15.00 ml
4.	Lemon juice	3.00ml

Principle:

A face pack is a thick substance which is spread on your face in the form of liquid or past. They are then allowed to dry or set with the object of improving the appearance of the skin, by producing a transient tightening effect as well as by cleansing the skin. The warmth and tightening effect resulting from their application produce the stimulating sensation of a rejuvenated face, while the colloidal and adsorptive clays and earth which are present in some packs will absorb grease and dirt from the facial skin. When they eventually removed from the skin, skin debris and black heads may be removed simultaneously. It should produce a definite sensation of tightening of skin after application. It should possess a significant cleansing of the skin. It must be dermatologically innocuous and non-toxic.

Procedure:

- Crush the fresh lemon juice and take out from lemon fruit
- Add the pure honey and olive oil

- To the above mixer add the rose water drop by drop. Then uniformly mix it and apply the pack all over your face.
- Keep it on for 15 minutes and then rinse off with cold water.

Uses:

- It is good for skin and are very productive in enhancing your beauty
- It can remove dead skin cells and lighten age spots, unwanted freckles and clears facial discolorations

Report:

References:

1. Text book of "Pharmacognosy & Phytochemistry a comprehensive approach" by S.L Deore, S.S Khadabadi, B.A. Baviskar, Page No: 617
2. Text book of "Industrial Pharmacognosy" by Kalia Page No: 616

ExpNo:

Date:

LEMON HAND LOTION

Aim:

To prepare the Herbaceous Formulation of Lemon hand lotion

Formula:

Sl.No	**Name of the ingredients**	**Quantity** mg/gm/Kg (or) ml/L
1.	Pectin	2.50gm
2.	Lemon juice	10.50ml
3.	Citric acid	2.50gm
4.	Benzoic acid	0.150gm
5.	Glycerin	6.00gm
6.	Alcohol	15.00ml
7.	Perfume	0.50ml
8.	Water	Q.s to make 100gm

Principle:

Lotions are usually liquid suspension or semi-solid containing one or more medicaments, intended to be applied to the uniform skin without friction. They either dabbed on the skin or applied on the suitable dressing and converted with waterproof substances to reduce the evaporation.

Lime juice is very beneficial for skin when applied externally. It rejuvenates the skin, keeps it shining, protects it from infections and reduces body odour due to presence of a large amount of vitamin-C and Flavonoids, both of which are class-1 anti oxidants, anti biotic and disinfectants.

Glycerin is properties make it very good for the skin and leave skin feeling smooth and moisturized

Rosewater acts as a mild antiseptic for skin irritations, acne and hydrating skin and body. Also reduces inflamed and helps maintain the PH level of the skin

Procedure:

- Mix theCitric acid, Benzoic acid, and lemon juice
- Add Pectin, Glycerin with sufficient amount of Rosewater
- The above mixture is added to the alcohol. Make the volume with rose water

Uses:

- When applied externally on skin, its acids scrub out the dead cells, cures, rashes, bruises etc.

Report:

References:

1. Text book of "Pharmacognosy&Phytochemistry a comprehensive approach" by S.L Deore, S.S Khadabadi, B.A. Baviskar, Page No: 617
2. Text book of "Industrial Pharmacognosy" by Kalia Page No: 254-267
3. Health and medicinal properties of lemon (Citrus Limonum) International Journal of Ayurvedic and Herbal Medicine,by M.Mohanapriya, Dr.LalithaRamaswamy and Dr.R. Rajendran, ISSN-2249-5746, 3:1 Jan (2013)1095:1100.

Exp No:

Date:

FORMULATION OF HENNA HAIR OIL

Aim:

To formulate 10ml of 10% henna hair oil.

Requirements:

- Powdered hennaleaves
- Ethanol
- Coconut oil etc

Principle:

Henna consists of dried leaflets of *Lawsonia inermis* belonging to the family Lythraceae. It contains a colouring matter lawsone (α hydroxyl naphthaquinone), various phenolic glycosides, coumarins, xanthones, quinoides, β sitosterol glycoside, flavanoids including luteolin and its 7-O-glycoside, fats, resins and henna tannin. Henna is commonly used as dye for hair and as a hair growth stimulator. In this formulation, henna extract was incorporated into oil for its activity.

Procedure:

Preparation of henna extract

Henna leaves were collected, dried under shade and powdered. 25g of powder was taken and extracted with ethanol for 20min. Then it was filtered and filtrate was evaporated off.

Formulation of henna hair oil

Hennaextract - 10%

Coconutoil - Q.sto100ml

1g of henna extract was weighed and transferred to a bottle containing 10ml of coconut oil. Then, it was mixed thoroughly by bottle shaking method and the bottle was labeled.

Uses:

It is a hair growth stimulator.

Report:

Reference:

Kokate, A.P Purohit, S.B.Gokhale, Pharmacognosy, 23rd edition, NiraliPrakashan Publications, Pune, 2003

Exp no :
Date :

DETERMINATION OF ALCOHOL CONTENT OF ARISHTA

AIM

To determine the alcohol content of Asokarishta.

REAGENTS USED

Asokarishta, Distilled water

APPARATUS USED

RB flask, Heating mantle, Distillation apparatus, Specific gravity bottle

PRINCIPLE

Arishta means that the herbs are fermented to prepare the medicine. A decotion or fresh juice is extracted out of the herbs and then sweeteners (for example, honey, jaggery,sugar,etc.) are added. Apart from this, fermenting aids such as Dhatakipushpa, etc. and Prakashepa Churna are mixed with this. This mixture is then left to ferment for 30-60 days. This is then filtered and kept for settling. Asokarishta is extensively used in Ayurvedic treatment of heavy menstrual bleeding and other gynecological complaints.It is also used in nasal bleeding,hemorrhoids and indigestion.

The apparatus consist of a RB flask fitted with a distillation head with a steam trap and attached to a vertical condenser. A tube is fitted to the lower part of condenser and comes the distillate into the lower part of 100ml or 250ml volume flask. The volume flask is immersed in a beaker containing a mixture of ice and water during the distillation.

PROCEDURE

Determination of alcohol content

25ml of formulation was measured in a graduated cylinder and transferred to a distillation flask of about 500 ml capacity. The cylinder was washed with about 150ml of water and added to the flask. Two pieces of porcelain was added to the distillation assembly.

About 90ml of the distillate was collected in to the flask. From this 25ml was taken and diluted to 100ml with water and the specific gravity was determined at 25ºC. The percentage v/v of

alcohol corresponding to the specific gravity obtained with reference to the official table provided was found. It was multiplied with 4 to get the alcohol content present in 100ml of the formulation.

Determination of specific gravity

Specific gravity was determined using specific gravity bottle at 25ºC.

REPORT

Alcohol content was found to be

REFERENCE

The Ayurvedic Pharmacopoeia of India. Part II, Volume I. Government of India Ministry of Health and Family Welfare Department of Ayurveda, Yoga & Naturopathy,Unani, Siddha and Homoeopathy Ayush. I sted.New Delhi;2008.p.226

CALCULATIONS:

1. **DETERMINATION OF SPECIFIC GRAVITY**

Weight of Specific Gravity Bottle =

Weight of Specific Gravity Bottle+Water =

Weight of Specific Gravity Bottle+Arishta =

Specific Gravityof Arishta= Wt.Of Arisha/Wt.Of Water =

2. **DETERMINATION OF ALCOHOL CONTENT**

Specific Gravity of Distillate =

Ethanol Content (As per IP) =

Percentage Ethanol Present = Ethanol Content (As per IP)× 4= ---------- %V/V

Exp no
Date :

DETERMINATION OF ALCOHOL CONTENT OF ASAVA

AIM

To carry out the standardization of Aravindasava

REAGENTS USED

Aravindasava, Distilled water

APPARATUS USED

RB flask, Heating mantle, Distillation apparatus, Specific gravity bottle

PRINCIPLE

Asava are ayurvedic medicines, which are prepared with natural fermentation process using herbs, water and sugar. They are self-generated herbal fermentations of traditional Ayurvedic system. They are alcoholic medicaments prepared by allowing the herbal juices to undergo fermentation with the addition of sugars . The presence of alcohol in the preparation shows several advantages, like better keeping quality, enhanced therapeutic properties, improvement in the efficiency of extraction of drug molecules from the herbs and improvement in drug delivery into the human body sites.

Aravindasava is extensively used in children for loss of appetite, lack of proper body weight and strengthlessness and is an effective tonic for children in case of rickets, diarrhea, cough, constipation etc.

PROCEDURE

Determination of alcohol content

25ml of formulation was measured in a graduated cylinder and transferred to a distillation flask of about 500 ml capacity. The cylinder was washed with about 150ml of water and added to the flask. Two pieces of porcelain was added to the distillation assembly.

About 90ml of the distillate was collected in to the flask. From this 25ml was taken and diluted to 100 ml with water and the specific gravity was determined at 25ºC. The percentage v/v of alcohol corresponding to the specific gravity obtained with reference to the official table provided was found. It was multiplied with 4 to get the alcohol content present in 100 ml of the formulation.

Determination of specific gravity

Specific gravity was determined using specific gravity bottle at 25ºC.

REPORT

Alcohol content was found to be

REFERENCE

1. Pharmaceutical Studies for Ayurvedic Formulations, CCRIMH, NewDelhi

2. Indian Pharmacopoeia, 1996, 4th edition. Indian Pharmacopoeia Commission,Page no. 66–67.

3. The Ayurvedic Pharmacopoeia of India. 2008, 1st edition. Part II. Vol. 2. New Delhi, Department of AYUSH. Page no. 47–48

CALCULATIONS:

1. DETERMINATION OF SPECIFIC GRAVITY

Weight of Specific Gravity Bottle =

Weight of Specific Gravity Bottle+Water =

Weight of Specific Gravity Bottle+Asava =

Specific Gravityof Arishta= Wt.Of Asava/Wt.Of Water =

2. DETERMINATION OF ALCOHOL CONTENT

Specific Gravity of Distillate =

Ethanol Content (As per IP) =

Percentage Ethanol Present = Ethanol Content (As per IP)× 4= ---------- %V/V

ExpNo:

Date:

PHYTOCHEMICAL SCREENING OF CRUDE DRUGS

AIM

To perform preliminary phytochemical screening of crude drugs

REQUIREMENTS

Test tubes, heating mantle, glass rod, beaker, conical flask

PRINCIPLE

Plants are the reservoirs of potentially useful chemical compounds which could serve as newer leads and clues for new drug design. Phytochemical screening refers to the extraction, screening and identification of the therapeutically active substances found in plants. Some of the important pharmaceutically active compounds that can be derived from plants are flavanoids, alkaloids, phenolic compounds, glycosides etc. Correlation between the phytoconstituents and the bioactivity of plant is desirable to know for the synthesis of compounds with specific activities to treat various health ailments and chronic disease as well

PROCEDURE

Extraction of crude drug

- Take 50g of powdered crude drug and macerate it with 500ml of ethanol in a conical flask for 24 hr
- Then occasionally shake with 6hr time period and allow it to stand for 18 hr.
- After filtration evaporate the filtrate to dryness in a a tare flat bottom shallow dish

Preparation of test solution

- Take 500 mg of extract and dissolve it in 100ml of ethanol . stir the solution till the extract is completely soluble in ethanol
- The sample solution then subjected to various qualitative tests to reveal the presence or absence of common phytopharmaceuticals.

SL.NO	NAME OF TEST	PROCEDURE	OBSERVATION
TEST FOR CARBOHYDRATE			
1	Molish test	To 2-3 ml of the test solution, added few drops of molish reagent solution and was shaken. Concentrated sulphuric acid was added from the sides of the test tube	Violet ring formed at the junction of two liquids
2	Fehlings test	To 1 ml of the test solution , equal quantities of Fehling solution A and B was added and heated	Formation of brick red precipitate indicates the presence of reducing Sugars
3	Iodine test	To the 3 ml of test solution few drop of iodine solution was added	Blue color appeared which was disappeared on boiling and reappeared on cooling
4	Benedict test	To 5 ml of benedicts solution , add 1 ml of the test solution and shake each tube. Place the tube in a boiling waterbath and heat for 3 minutes. Remove the tubes from the heat and allow them to cool	Formation of green- red or yellow precipitate
TEST FOR ALKALOIDS			
Preparation of test solution: the test solution was prepared by dissolving the extracts in dilute hydrochloric acid, the solution was filtered. The filtrate was then subjected to the following test for the detection of the presence of alkaloids			
1	Dragendroff's test	Add few ml of Dragendroffs reagent (potassium bismuth iodide solution)to 3 ml of the filtrate	Orange brown color
2	Mayer's test	Few drops of mayers reagent (potassium mercuric iodide solution) were added into 3 ml of test solution	Cream colored precipitate
3	Hagers's test	Small quantity of Hager's reagent (saturated solution of picric acid) was added in filtrate	Yellow colored precipitate
4	Wagner's test	Few drops of Wagner's reagent (iodine	Reddish brown

		in potassium iodide) were added in filtrate	precipitate
TEST FOR SAPONINS			
Prepararion of test solution: it was prepared by dissolving extract in water and making it aqueous extract			
1	Foam test	The drug extracts were vigorously shaken with water	Formation of persistent foam
2	Liberman burchard's test	To drug extracts few drops of glacial acetic acid and two drops of con.H_2SO_4 were added	Color change from rose red, violet , blue to green reveals the presence of steroidal saponins
TEST FOR PROTEINS			
1	Biuret test	To about 3 ml of the extract , 40% NaOH solution and few drops of 1% $CuSO_4$ was added	Blue color
2	Xanthoproteic test	The test solution was treated with con. HNO_3 which on boiling	Yellow precipitate
3	Millon test	Millon reagent has been added to the test solution and heated in a waterbath	A reddish brown coloration or precipitate
TEST FOR AMINOACIDS			
Preparation of Test Solution: It is prepared by dissolving the test sample in water			
1	Ninhydrin test	3 ml of test solution was heated and 3 drops of 5% ninhydrin solution was added in boiling water and was boiled for 10 min	Purple or bluish color appeared
TEST FOR STEROIDS AND TRITERPENOIDS			
Preparation of test solution: It is prepared by dissolving the extracts in chloroform and subjected to following test			
1	Salkowski test	A few drops of concentrated H_2SO_4	The formation of red

		were added to the test solution and allowed to stand for sometime	color in the lower layer indicates the presence of steroids and formation of yellow color indicates the presence of triterpenoids
2	Libermann burchard test	Some drops of acetic anhydride were added to test solution , the contents were boiled and cooled. Then concentrated sulphuric acid was added from the sides of test tube	The formation of brown ring at the junction of two layers and the upper layer turns green indicating the presence of steroids
TEST FOR GLYCOSIDES			
Preparation of test solution: it is prepared by dissolving in alcohol			
1	Borntrager's test(anthraquinone glycoside)	To about 3 ml extract, dilute sulphuric acid was added . it was boiled and filtered. To cold extract equal volume of benzene or chloroform was added. After shaking organic solvents were well separated then add ammonium	Ammonical layer turned pink
2	Keller killani test	To the test solution few drops of ferric chloride solution and concentrated H_2SO_4	Formation of two layer occur, lower layer of reddish brown color and upper layer of bluish green color simultaneously
3	Baljet test	Sodium picrate was added to the test solution	The color of solution changed from yellow to orange
TEST FOR FLAVANOIDS			
Preparation of test solution : to small amount of extract equal amount of 2M Hydrochloric acid was added and heated for about 30-40 min at 100℃. The extract was cooled down and again extracted with			

ethyl acetate which was further concentrated to dryness and ready to be used as test sample			
1	Shinoda test	5 ml of ethanol was added in the extract and then few drops of concentrated HCl and and 0.5g magnesium turnings were added	Presence of Pink color
2	Lead acetate test	To small quantity of extract, lead acetate solution was added	Yellow colored Precipitate
3	Sodium hydroxide test	Addition of large amount of NaOH to extract	Showed yellow coloration which decolorized addition of acid, indicates the presence of flavones
TEST FOR TANNINS			
Preparation of solution test: The test solution was prepared by dissolving the extract in water and alcohol			
1	Ferric chloride solution test	To 1 ml of the extract , ferric chloride solution was added	Formation of a dark blue or greenish black color
2	Gelatin test	A few ml of 1% gelatin solution containing 10% NaCl were added to the test solution	Formation of white precipitate
3	Lead acetate test	A few ml of 10% lead acetate were added to the test solution	Formation of white Precipitate
TEST FOR FATS AND OILS			
1	Solubility test	Oils are soluble in ether, benzene and chloroform but insoluble in ethanol and water	

REPORT.

The phytochemical screening of herbal drug extract was carried out.

REFERENCE

1. Dr. Pulok K Mukherjee. Quality control of herbal drugs. An approach to evaluation of botanicals. 1st edition. Pharmaceutical publishers. 2002; p.529-534.

2. Kokate CK. Practical pharmacognosy. 4th edition. Delhi: Nirali Prakashan. 2008.p.21.

3. WHO, Geneva. Quality control methods for medicinal plant material. 1st Ed. Delhi: AITBS Publishers and distributors; 2002:p.97.

Exp no :

Date

MONOGRAPH ANALYSIS OF *ZINGIBER OFFICINALE*

AIM

To perform the monograph analysis of the given sample of *Zingiber officinale*.

MONOGRAPH OF *ZINGIBER OFFICINALE*

Classification

Kingdom: Plantae

Division Angiosperms

Class Monocots

Order: Scitaminae

Family: Zingiberaceae

Genus: Zingiber

Species: *Z. officinale*

Biological source: Ginger consists of the whole or cut rhizome of *Zingiber officinale* (Zingiberaceae)

Chemical constituents:

Constituents: Volatile oil 1-4 %. More than 100 compounds are identified, most of them terpenoids mainly sesquiterpenoids (α-zingiberene, β-sesquiphellandrene, β-bisabolene, α-farnesene, curcumene (zingiberol) and smaller amounts of monoterpenoids (camphene, β-phellandrene, cineole, geraniol, curcumene, citral, terpineol, borneol). The pungent principles, the gingerols (4-7.5 %) are a homologous series of phenols. The principal one of these is 6-gingerol. Gingerols with other chain-lengths, e.g., 8-gingerol and 10-gingerol, are present in smaller amounts.

Therapeutic uses: Carminative, antiemetic, anti-inflammatory.

Macroscopic characters:

Colour & Appearance: yellowish brown or light brown. Scrapped rhizome with buff external surface showing longitudinal striations and occasional loose fibres, outer surface dark brown and more or less covered with cork which conspicuous, narrow, longitudinal and transverse ridges

Odour: aromatic

Taste ; Pungent

TESTS LIMITS(as per WHO)

Tests for extraneous material

□ Foreign matter	<1.0%
□ Sand and Silica	Nil
□ Insect infestation	Nil
□ Rodent infestation	Nil

Physico-chemical analysis

□ Ash content	<8.0%w/w
□ Acid insoluble ash	<1.0% w/w
□ Moisture content	<12.0% w/w
□ Volatile oil content	1.0-2.6% w/w
□ Alcohol soluble extractive value	>6.0% w/w
□ Water soluble extractive value	>14.0% w/w

TLC PROFILE

Stationary phase : silica gel

Solvent system : n-Hexane: Ether (40:60)

Chamber saturation : 30 min.

Standard solution : Gingerol.

Test solution : Chloroform extract of ginger powder

Detection : Vanillin sulfuric acid.

REPORT The monograph analysis of the given sample of *Zingiber officinale* was performed and the results are shown in the table.

Parameters

Observed values

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1.Foreign matter	
2. Sand and Silica	
3. Insect infestation	
4. Rodent infestation	

5. Ash content	
6. Acid insoluble ash	
7. Moisture content	
8. Volatile oil content	
9. Alcohol soluble extractive value	
10. Water soluble extractive value	
11. Rf values	

REFERENCE

1. Dr Pulok mukherji: Quality control of herbal drugs: Page no:769

2. The Ayurvedic Pharmacopoeia of India Part-I, Volume –I, First edition, 2001, Page no:103

Expt no:

Date :

FORMULATION AND STANDARDIZATION OF TRIPHALA CHURNA

AIM

To formulate *Triphal churna* and standardize the formulation by comparing with marketed product.

REQUIREMENTS

Rotary Vacuum Evaporator, water bath, Automatic Centrifuge ,UV spectrophotometer, Methanol, Lead nitrate Ammonium Ferrous Sulphide, Hydroxyl amine hydrochloride, Silica gel

PRINCIPLE

Standardization is an essential factor for polyherbal formulation in order to assess the quality of the drugs based on the concentration of their active principle. It is very important to establish a system of standardization for every plant medicine in the market. Plant material when used in bulk quantity may vary in its chemical content and therefore, in its therapeutic effect according to different batches of collection e.g. collection in different seasons and/or from sites with different environmental surroundings or geographical location. WHO has appreciated the importance of medicinal plants for public health care in developing nations and has evolved guidelines to support the member states in their efforts to formulate national policies on traditional medicine and to study their potential usefulness including evaluation of its quality, safety and efficacy. The process of evaluating the quality and purity of crude drugs by means of various parameters like morphological, microscopically, physical, chemical and biological observation is called standardization. Quality control parameters for herbal formulations

a) Physical parameters: It include colour, appearance, Odour, clarity, viscosity, moisture content, ash values, pH, disintegration time, friability, hardness, flow property, flocculation, sedimentation and settling rate.

b) Chemical parameters: It includes limit tests for heavy metal, extractive values, chemical assays for active constituents, etc.

c) Chromatographic analysis of herbals: Chromatographic analysis can be carried out using TLC, HPLC, HPTLC

Churna means “Powder” in Sanskrit. *Churnas* are ayurvedic preparations and may contain isolated or a combination of herbs and minerals. It is defined as a fine powder of drug or drugs in

Ayurvedic system of medicine. Drugs according to the formulation composition of the particular *Churna* are collected, dried, powdered individually and passed through sieve number 85 to prepare a fine powder. They are mixed in the specified proportion and stored in well closed container. The churna is free flowing and retains its potency for one year, if preserved in an airtight containers. *Triphala churna, Trikatu churna, Drakeshadi churna* and *Sudharsana churna* are some of examples.

Emblica officinalis is effective in the treatment of hepatotoxicity, amlapitta (peptic ulcer) and in dyspepsia. The fruits exhibit hypolipiadaemic and anti-atherosclerotic effects in rabbitsand rats. Lignin isolated form *Terminalia bellirica* were shown to possess anti-HIV, antimalarial, protective effect on liver and anti-fungal activities. The fruit pericarp of *Terminalia chebula* showed Cytoprotective activity, cardio tonic activity, anti-mutagenic activity and antifungal properties.

PROCEDURE

FORMULATION

Composition

Sl No	**Ingredients**	**Biological source**	**Quantity**
1	Bahera	*Terminalia belecrica*	20g
2	Hirada	*Terminalia chebula*	10g
3	Amla	*Emblica officinalis*	30g

All ingredients are cleaned, dried, powdered and passed through sieve no 85. Each ingredients were weighed separately and obtained a homogeneous blend. Pack it in tightly closed container to protect from light and moisture**.**

STANDARDIZATION

The following parameters are determined by using the prepared formulation and marketed formulation (*Dabur Triphal Churna*)

i) Physical parameters

Determination of Powder Flow Property

Angle of Repose. The angle of repose of powder blend was determined by the funnel method. The accurately weight powder blend were taken in the funnel. The height of the funnel was adjusted in such a way the tip of the funnel just touched the apex of the

powder blend. The powder blend was allowed to flow through the funnel freely on to the surface. The diameter of the powder cone was measured and angle of repose was calculated using the following equation

. **Tan q = h/r,** Where, h and r are the height and radius of the powder cone.

Determination of Total Ash

Incinerate about 2 to 3 g accurately weighed drug powder in a tarred platinum or silica dish at a temperature not exceeding 450^0 C until free from carbon, cool and weigh. If a carbon free ash cannot be obtained in this way, exhaust the charred mass with hot water, collect the residue on an ashless filter paper, incinerate the residue and filter paper, add the filtrate, evaporate to dryness, and ignite at a temperature not exceeding 450^{0}C. Calculate the percentage of ash with reference to the air-dried drug.

Determination of Acid Insoluble Ash

To the crucible containing total ash, add 25 ml of dilute hydrochloric acid. Collect the insoluble matter on an ashless filter paper and wash with hot water until the filtrate is neutral. Transfer the filter paper containing the insoluble matter to the original crucible, dry on a hot-plate and ignite to constant weight. Allow the residue to cool in a suitable desiccator for 30 minutes and weigh without delay. Calculate the content of acid-insoluble ash with reference to the air-dried drug.

Determination of Water Soluble Ash

Boil the total ash for 5 minutes with 25 ml of water; collect insoluble matter in an ashless filter paper, wash with hot water, and ignite for 15 minutes at a temperature not exceeding 450^{0}C. Subtract the weight of the insoluble matter from the weight of the ash; the difference in weight represents the water-soluble ash. Calculate the percentage of water-soluble ash with reference to the air-dried drug.

DETERMINATION OF ALCOHOL SOLUBLE EXTRACTIVE

5g of accurately weighed coarsely powdered air dried ginger was macerated with 100 ml of 90 % alcohol in a stoppered flask for about 24 hours, shaking frequently during the first 6 hours. It was then rapidly filtered through a filter paper taking care to prevent the loss of alcohol. Evaporated 25 ml of the alcoholic extract to dryness in a previously weighed flat bottomed shallow dish. Dried at 105^{0}C and weighed. The % of alcohol soluble extractive was calculated with respect to the air dried drug.

DETERMINATION OF WATER SOLUBLE EXTRACTIVE

Follow the above procedure using Chloroform water instead of alcohol.

REPORT

Triphala churna was formulated and standardized

. **REFERENCE**

1. Kokate CK, Purohit AP, Gokhale SB. Textbook of Pharmacognosy. 14th ed. Pune: Nirali Prakashan. 2000;1-4.

2. Quality controls methods for medicinal plant materials. World Health Organization, Geneva. AITBS publisher and distributors, Delhi. 2002;8-70.

3. Evans WC. Trease and Evans Pharmacognosy, 15th ed. London, United Kingdom: Saunders. 2002;245-7