

DEERGHAYU

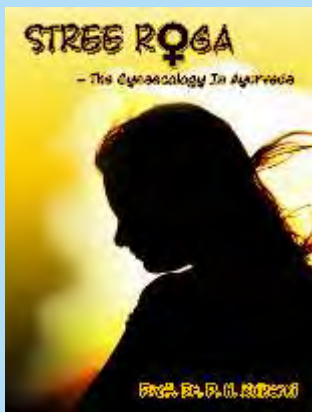
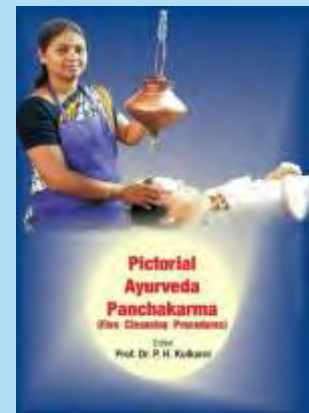
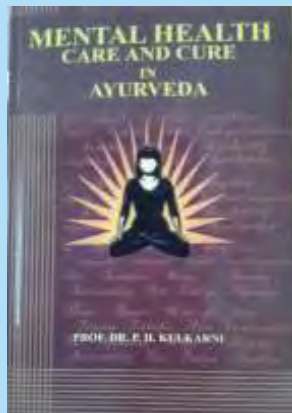
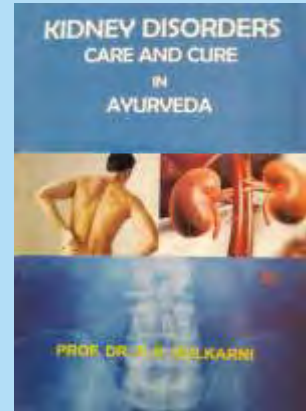
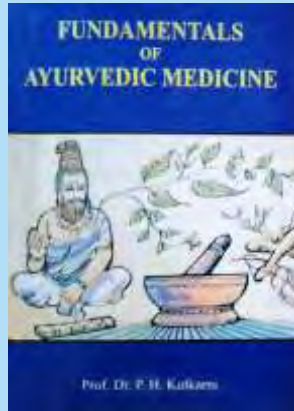
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Research : Clinical

"Clinical assessment of the efficacy of Charakokt Lashunksheer in the management of Grudhrasi"

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ABSTRACT

Grudhrasi is a nanatmaj vatavydhi in which patient experiences pain primarily in the sphik Pradesh (low backache) which later radiates down to kati (lumbar), posterior aspect of uru (thigh), janu (knee), jangha and pada (foot). It can be correlated with sciatica of modern medicine.

The present study was aimed to assess clinically the effect of Lashunaksheer, mentioned in Charaksamhita, in the management of Grudhrasi. 30 patients were treated with Lashunaksheer for a month. Results obtained were analysed for statistical significance which shows Lashunksheer is effective in bringing relief in sings and symptoms.

Key words : Grudhrasi, sciatica, Lashunaksheer.

INTRODUCTION

Grudhrasi is a shulpradhan nanatmaj vatavyadhi which affects the daily routine of patients. Patient suffering from Grudharsi is unable to walk properly. According to Charaksamihita, stambha (stiffness), ruk (pain), toda (pricking sensation) and spandan (twitching) are the signs and symptoms of vataj Grudhrasi. Aruchi (anorexia), tandra (drowsiness) and gaurav (heaviness) are the additional symptoms of vatakaphaj Grudhrasi.

In can be correlated with sciatica which is characterized by low backache radiating down to legs and anterolateral aspect of foot.

In vatavyadhi, snehan (oleation), swedan (sudation), mrudu shodhan (purification) are effective. However, siravedh (blood-letting), agnikarma are mentioned for Grudhrasi. Various Shaman yogas (palliative preparations) are also mentioned in samhita. Among these Lashunaksheer from Charaksamhita Gulmachikitsa adhyay is selected for present study.

Aim

To assess clinically the effect of Lashunaksheer in the management of Grudhrasi.

Previous work done

- Grudhrasi roga ka naikanika evam chikitsatmaka adhyayan (Rasona Prayog) - 1975, Kayachikitsa, Jaipur.

- Concept of Grudhrasi in Ayurveda and modern medical sciences and its management by and ayurvedic drug Rasona - 1993, Kayaachikitsa, Varanasi.

Materials and methods

30 Patients suffering from Grudhrasi attending Kayachikitsa OPD of Y.A.C.P.G.T & R.C., Kodoli were selected for the study.

Inclusive criteria :

1. Age group between 20 to 60 years of either sex.
2. Presence of clinical features of both vataj & vatakaphaj Grudhrasi.
3. Pain along the course of Grudhrasi Nadi (Sciatic Nerve)
4. Straight Leg Raising (SLR) Test being positive.
5. Patient diagnosed with Grudhrasi - not more than 1 year.

Exclusive Critria :

1. Degenerative disorders with marked deformity, Infective disorders, Congenital abnormalities in lumber spine, Surgical indications.
2. History of major trauma
3. Pregnancy

Plan of work

80 ml of Lashunaksheer was advised to take at Pratah-Abhakt kal (at morning, empty stomach) for the duration of 1 month.

Lashunaksheer It was prepared according to the description given in Charaksamhita Chikitsasthan 5/94-95 which contains 1 part shuddha lashun (*Allium sativum*, Lilaceae), 4 parts of dugdh (milk) 2 parts water. Before that lashun shodhan (purification of garlic) was done in the buttermilk.

Criteria for Assessment

Assessment was done initially before intervention of medicine and there after weekly for a period of 1 month on the basis of improvement in the sunjectice (ruk, toda, stambha, spandan, aruchi, tandra, gaurav) and objective parameters (SLR test) on various rating scales. Results obtained were analysed for statistical significance by adapting Wilcoxon signed rank test. The total effect of the drug on the parameters was assessed as follow

Good improvement - >75% relief in signs & symptoms

Moderate improvement - > 51% to 75% relief in signs & symptoms

Mild improvement - > 25% to 50% relief in signs & symptoms

No improvement >- below 25% relief in signs & symptoms

Result and Discussion

The response of the patients to the treatment done was observed according to the subjective & objective parameters before and after the treatment.

Maximum patients were belonging to 41-50yr of age group (40%). Maximum patients were male (60%). Improper sitting posture for prolonged period, travelling, weight lifting, long walking, and suppression of natural urges (vegvidharan) were the aggravating factors in most of the patients. In case of signs and symptoms Ruk was found in all patients. 93.3% patients were having complaints of toda. Stambha was seen in all and spandan was present in 43.3% patients. Gaurav, aruchi, tandra were present in 53.3%, 56.6% and 46.6% respectively. Positive SLR was observed in all patients.

30 patients treated with Lashunaksheer showed that this drug provided highly significant relief in symptoms ruk (58.8%) and in stambha (67.3%). It also provided significant relief in the symptoms toda (28.7%), spandhan (50%), aruchi (50%), tandra (66.3%), gaurav (47.3%) and SLR test (21.8%).

On assessing overall effect, moderate improvement was found in ruk, stambha and tandra. Mild improvement was observed in toda, spandan, aruchi and gaurav.

Conclusion

The clinical study reveals that there is significant relief in symptoms of Grudhrasi after use of Lashunaksheer. Improvement was observed in all signs and symptoms.

Clinical trials of the drug conclude that it possesses properties like shoolhar (analgesic), vatahar without any toxic effects. Preventive aspect and patient's education such as proper information about causes, pathya-apathya (Do's and Don'ts) play an important role in the management of Grudhrasi.

Acknowledgement

Special thanks to Dr. C.S. Suryawanshi, Dr. S. G. Kulkarni, Dr. M. M. Godbole, Dr. D. M. Tamboli.

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Review Article

Review study of Erand oil as hair tonic

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Abstract

Erand oil is poisonous but also used as hair tonic. It is having scalp rejuvenating functions and also useful to solve many hair problems like hair fall, slow hair growth, dandruff. Hair problems are often the result of a lack of nutrients in the hair and scalp. It gives nutrient like minerals, vitamins as well as they are antifungal and antibacterial activity so gives good hair. Also it is useful to treat hair break, split ends, dry hair and scalp infection. It illustrates erand oil properties regarding its use in hair problems and indicates application for Healthy hair by Ayurvedic and modern view.

Introduction

Poisonous activity of many plants is mentioned in Ayurveda. They are harmful and cause nuisance to life, ayurveda has appreciated their use in therapeutics. These poisons can be utilized as medicine after their shodhana i.e. detoxification procedure. Categorically strong poisons could be the best medicine provided if used properly in correct therapeutic dose and formulation. On the contrary, a good medicine may affect therapeutic dose adversely unless it is used properly for proper person in proper dose. Charaka sutrasathana 1/127.

When the right herbs are mixed with the right oils, the Ayurvedic hair oil can help balance the three types of hair, known in Ayurvedic systems as Vata, Pitta and Kapha, and can also help solve many other hair problems.

Using erand oil for hair care is one of the oldest beauty treatments dating back to ancient Egyptian times. The oil contains a wide variety of minerals and fatty acids which are essential for growing strong and healthy hair. Erand oil is clear, colorless, thick and luxurious oil that is jam-packed full of healthy nutrients obtained from aranda, arandi, mole bean and ricinus communis. It is also called castor oil. In modern view, Ricinus communis is irritant organic vegetable poison. Ricinus communis is used in many Ayurvedic preparations. It is used in rheumatic arthritis and also in other diseases. It is beneficial for hair because some vital nutrients such as vitamin E, minerals and proteins, which are required for healthy hair. Also the main problem in the health of human is bacterial and fungal infection as per the various studies. Erand was been proved as antibacterial and antifungal which will provide good health to hair. Erand oil has scalp rejuvenating functions, it can help stimulate the growth of

hair by increasing circulation in scalp. The increased blood circulation caused by the castor oil will improve the flow of nutrients to your hair shaft helping them to grow.

Properties of erand oil :

Synonyms - gandhavahasta, vatari, panchagula, citra, urubu, rabu.

Rasa - madhur (sweet), katu, kashya (better).

Postdigestive effect (Vipaka) - madhura (sweet).

Potency (Virya) - ushana (hot)

Special effect diseases (Prabhava) - purgative (virechana)

Uses - kaphavata vikara, vaginal cleansing (yonivishodan) blood disease (rakta vikara) rejuvenation (rasayana)

Chemical contitute - Omega - 9/6 acids, vitamin - E, amino acidm Ricinoleic acid

Alkoloides - recin

Erand oil properties described in sushrut samhita sutrasthana. 25/114

Hair Problems -

Ayurveda view -

Erand oil is unctous (sinigadha) due well sprayed (penetrated) in scalp Sushamastrovishodhan - improves function of small pore of scalp. Head (Shira) is kafavata shathana (Location) and erand oil is kafavatashamaka. Hair (Kesha) is wastage product of asthi dhatu.

Ayurvedic hair oil treatment should be combined with a healthy diet, because the diet can also help provide important nutrients to the hair. It is made from base oil such as coconut, sesame or olive oil and a blend of Ayurvedic herbs such as hibiscus, brahmi, curry and henna. Ayurvedic hair oil can help maintain or restore these nutrients, which helps reduce frizz and promotes new hair growth, as well as stonger and healthier hair. Herbal drug hair oil treatment are beneficial for hair problems such as hair loss, dandruff, premature graying and unmanageable hair.

Hair that is generally frizzy, dry and subject to split ends is referred to as Vata prakruti person hair. For this type, Ayurveda recommends oils such as almond or sesame seed oil along with brahmi and other herbs and should be mixed with erand oil to improve their efficacy. Pitta prakruti person hair is thin and subject to premature graying, and it can be helped with a coconut oil and herbs such amalaki and bhringaraj mix with erand oil.

Kapha prakruti person hair is generally thick and oily, which can be balanced with neem along with sesame seed or olive or erand oil. Herbs such as resomary, jasmine, amalakim hibiscus and lavender can be mixed wih erand oil and helpful for all hair types.

Modern veiw

Hair loss : Hair loss is the most common problem today. Loss can be due to various reasons like hair styling, infection and dandruff. But by using erand oil this loss can be stopped. Ricinoleic acid that is present in erand oil helps to protect hair and stimulates circulation of nutrient rich blood to sclap. As per the research it was proved that, just take some erand oil and massage it to your scalp and roots. Wash it off, after leaving it for an hour or two.

Stimulates hair growth : It even supplies omega - 6 essential fatty acids that is needed to grow healthy hair, No other oil can be as good as erand oil to grow hair within a few weeks. After using this oil regularly on scalp, it boots circulation to the follicles, leading to hair growth.

Scalp infection : Scalp infection can major cause of hair problems like bald patches, itchy sclap, etc. This is the main cause to stop hair growth and to boast healthy, lustrous tresses. Then it is really essential to treat the scalp infections. The germicidal properties of omega - 9 essential fatty acids present in erand oil protect the scalp and hair from microbial fungal and antiviral infections.

Hair split ends hair breakage : Split ends and hair breakage is a sign of unhealthy hair. Since erand oil is filled with essential nutrients like vitamin E, amino acids and omega - 6 fatty acids, it is helpful to stop split ends and breakage of hair. The oil penetrates deep into scalp and smoothness and out rough hair cuticles. Since, erand oil is vey sticky, it can be mixed with lighter oils like olive or jojoba for easier application.

Conditions and moisturises hair : Natural omega - 9 acids present in this oil helps to lock the moisture in hair and scalp. So, it is a great conditioner for hair. erand oil can be applied in hair at least 15 minutes before using a shampoo. This will help to make hair smooth and soft. Also it can be mixed with any hair conditioner to soak in its benefits. Other than this, apply very little amount (one or two drops) of castor oil in hair each night as a part od daily hair conditioning routine.

Rid of dry scalp : Dry scalp can also leat to dandruff. But with of this oil can solve both problems. The omega - 9 fatty acids that are present in erand oil will nourish hair and prevent dry scalp.

To improve darkness and shine of hair : Almost everyone wants black and lustrous hair. But due to many reasons such as weather, chemical treatments and infections, hair losses its shine which can be overcome by erand oil. Nutrients and the humectants effect of the oil help the hair retain moisture and it look darker. It is having ability to coat hair shaft, and seal the moisture in and apply it evenly on hair. It can be heated up some erand oil and apply it on hair. Then wrap hair in a towel. After a few washes we can feel you locks getting shinier.

Thickness to hair : Thin locks are a sign of damaged hair. Hair thinning can lead to hair loss. Erand oi not only prevents hair damage, but also helps in providing thickness to hair. Regular use of this oil promotes thicker hair growth on scalp. The essential nutrients and omega 6

and 9 acids in this oil are very good to enhance the quality of hair.

Hair Regrowth : To use erand oil for hair regrowth, it is usually mixed with coconut oil since erand oil is very thick and viscous. Mix erand oil with oil, coconut oil, or emu oil in a 50:50 ratio. It's benefit from the castor oil for hair regrowth needed to 3 to 4 times a week for a few weeks.

Acknowledgement :

I give thanks to guide DR. MRUNAL TIWARI and dean DR. P. L. N. MURTHY and also thanks to LR. P. medical college, Islampur.

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Research Article - Clinical

Association of Dhatu sarata with mean corpuscular haemoglobin (MCH)

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Brief Abstract

Background and objective

According to Ayurveda our body is made up of Dosha, Dhatu and Mala. Vishudhatar Dhatu in the body is called as Sara Dhatu. "Sarata" is a factor, which represents the Bala of Dhatu, and it is of eight types; seven of seven Dhatus and eighth one is Satvasara. AshtaSarata Parikshana is explained especially to determine the Bala of person. In the Dashvidha Pariksha of Ayurveda, it has been stated that Sara Parikshana is one of the important investigations. But only subjective parameter is used for the assessment of Dhatu Sarata. Dhatu sarata one of the examinations mentioned in Ayurveda to know the qualitative state of a dhatu, while MCH indicates the amount of Haemoglobin present in RBC. There is need to add some objective parameters of modern science to our ancient science.

Methodology

The study was conducted on 50 individuals. With the help of Standard Sarata Proforma from C-DAC the percentage of all Dhatu sarata was estimated which was compared to the MCH values of each individual, estimated from Autoanalyser.

Then, a comparison was done between each of the Dhatu sarata and MCH of all the 50 individuals further statistical analysis was done.

Inclusion Criteria

50 healthy individuals; meals; age group of 20-25

Exclusion Criteria :

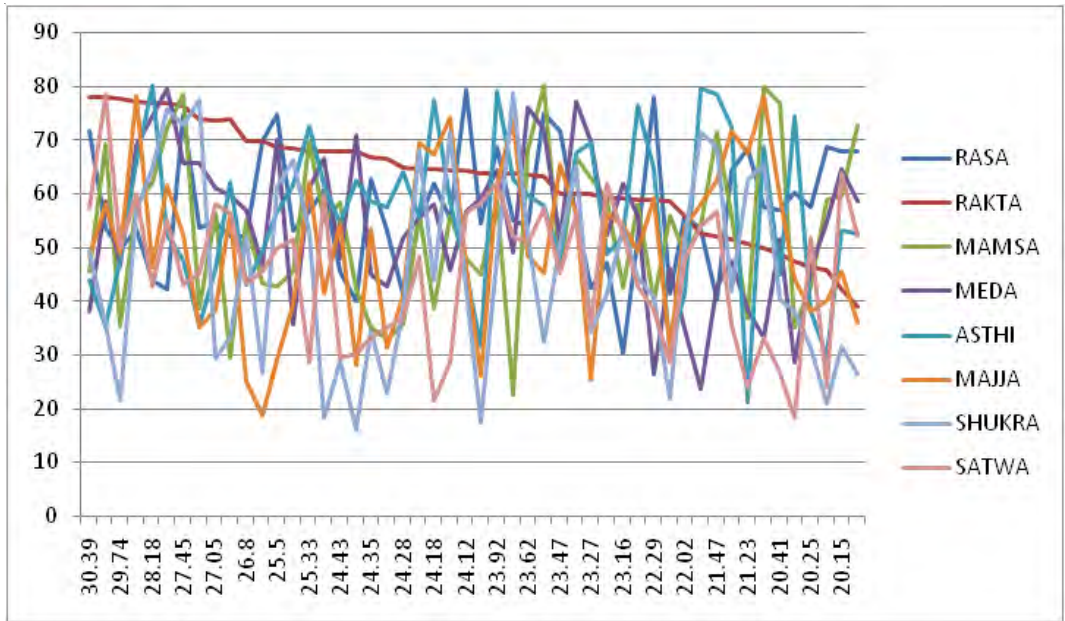
Individuals suffering from any major illness. Females were excluded.

OBSERVATION

RASA	RAKTA	MAMSA	MEDA	ASTHI	MAJJA	SHUKRA	SATWA	MCH
71.8	78.1	45.56	38.16	43.68	48.17	49.5	57.14	30.39
53.8	78	69.28	58.8	35.3	58.12	35.8	78.57	30.2
49.5	77.9	35.4	46.7	47.67	48.9	21.48	50	29.74
53.3	77.4	58.2	69.12	65.8	78.11	56.9	60	29.2
43.86	77.1	62.15	74.51	80.1	46.4	65.12	42.86	28.18
42.1	77	72.08	79.68	52.18	61.69	76.04	55.18	27.66
74.67	76.59	78.57	65.8	47.6	52.44	72.8	43.15	27.45
53.67	73.88	38.8	65.8	35.4	35.11	77.61	45.16	27.15
54.89	73.8	56.5	61.1	45.9	38.49	29.56	58.2	27.05
52.11	73.96	29.5	59.9	62.2	56.51	33.26	56.47	26.96
52.2	70	55.18	57.1	42.87	25.11	52.18	43.44	26.8
69.9	69.8	43.44	46.7	49.24	18.8	26.84	45.56	26.66
74.8	68.69	42.86	70.15	56.54	29.2	61.5	50	25.5
53.24	68.5	45.56	35.8	61.4	39.5	66.41	51.42	25.41
56.8	68	69.8	61.18	72.4	62.1	53.1	28.57	25.33
60.89	67.9	55.18	66.7	61.52	41.5	18.19	60	24.43
45.55	67.9	58.43	48.1	54.42	54.55	28.85	29.5	24.43
40.1	67.9	42.18	71.04	62.4	28.14	16.14	30.1	24.43
62.64	67	35.33	45.09	58.5	53.33	34.59	33.1	24.35
53.14	66.5	33.1	42.88	57.48	31.41	22.84	35.17	24.32
41.1	65	35.8	51.9	63.9	41.1	38.4	36.71	24.28
55.1	64.8	56.5	55.66	55.4	69.4	68.14	48.11	24.2
62	64.7	38.8	58.19	77.36	67.37	44.1	21.43	24.18
55.4	64.4	55.77	45.89	58.5	74.21	71.42	28.53	24.16
79.4	64.53	48.11	56.9	45.49	46.35	42.43	56.43	24.12
54.6	63.9	45.1	59.17	31.41	26.19	17.49	58.47	23.98
68.8	63.8	58.94	64.4	79.11	61.45	48.44	62.1	23.92
55	63.8	22.71	49.19	62.69	73.62	78.91	52	23.92
53.9	63.7	68.1	76.22	59.49	48.61	52.1	50.8	23.62
75.1	63.4	80.1	72.1	57.67	45.1	32.46	57.14	23.57
71.8	60	45.56	51.4	48	65.48	50.84	45.11	23.47
55.8	59.9	66.7	77.16	67.45	56.47	65.16	56.24	23.35
42.55	59.89	62.9	69.8	69.44	25.42	34.41	35.4	23.27
47.1	59.32	59	52.38	48.8	56	41.6	61.9	23.27
30.2	59.1	42.44	61.9	51.86	54.1	53.86	52.38	23.16
51.68	59	58.1	56	76.41	49.26	44.6	42.85	22.36
78.1	58.8	40.1	26.57	64.57	59.1	41.1	38.4	22.29
41.5	58.57	56	46.1	30.68	31.3	21.8	28.57	22.13
55.8	55.84	48.8	35.1	41.45	53.8	51.4	47.62	22.02
53.5	52.5	54.1	23.8	79.49	58.17	71.5	54.04	21.94
40.4	52.1	71.5	42.85	78.45	62.51	68.8	56.7	21.47
64.5	51.6	55.8	47.62	72.49	71.58	42.14	35.55	21.38
68.49	50.8	36.75	38.4	21.11	67.67	62.59	23.8	21.23

Graphical Representation & Statistical Analysis :-

- The X-axis represents the value of MCH of 50 individuals.
- The Y-axis represent the sarata percent of same individuals.

**Correlation values of all dhatu sarata and blood indices:-**

ANALYSIS	MCH
RASA	-0.10404
RAKTA	0.95782
MAMSA	-0.10142
MEDA	0.326494
ASTHI	-0.07478
MAJJA	-0.06915
SHUKRA	0.129397
SATWA	0.370567

Graphical representation of data was done. All the dhatu sarata were studied with respect to MCH. It was clearly visible that all other dhatu sarata showed a nonlinear or random relation with blood indices except Rakta Sarata. The graphical studied showed a nearly

linear relation between Rakta sarata and Blood Indices, this linear relation was further confirmed by applying Correlation test.

Association in terms of correlation was used, showing strong & significant relation between Raktasarata and MCH.

The study showed that all Dhatusarata showed a random or non linear relation with MCH except Raktasarata, which showed somewhat a linear relation, here statistical analysis also supported the linear relation, as the correlation value was greater than 0.9.

RESULTS & CONCLUSION:

- ❖ This can be stated that with increase in Rakta sarata percent the value of MCH also increases.
- ❖ Other dhatu sarata did not show any correlation with any of the Blood indices.
- ❖ The person having higher percentage of Rakta sarata possesses good values of MCH.
- ❖ Thus, there is a strong & positive correlation between Rakta sarata and MCH (mean corpuscular haemoglobin) while no relation was found in other sarata and MCH.

SCOPE & LIMITATION

1. It was a pilot study, with limited sample size of 50.
2. This study can be done with larger sample size & separately for different dhatu sarata and other blood indices.

Research Article - Clinical

The Efficacy of Gandhakadi Yoga (Ointment) in PAMA with special reference to Scabies.

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Abstract

Disease Pama described in Ayurveda is correlated with scabies in modern science. It is a major skin disease faced by number of unhygienic people in the society. In this study topical use of Gandhakadi Yoga in ointment form was done for thirty patients of trial group & topical use of Kapila Churna & Karanja Tailam was done on thirty patients of control group. In both the groups the drugs were applied for three days and observations were recorded 3rd, 10th & 30th day of the treatment. Special clinical record form was made. Subjective parameters were assessed for the Pitika with Kandu (vesicles with itching), Srava (discharge) & Daha (burningsensation).

Statistical analysis of the results was done & the efficacy of Gandhakadi ointment was proved to be very effective in the management of Pama (scabies). This study was done in Arogyashala Rugnalaya of Ayurveda Mahavidyalaya, Nashik.

Key words : Pama, Scabies, Gandhakadi Yoga.

Introduction

India is second largest populous country in the world and area wise being seventh. Being a developing country much population is living in lower socioeconomic class. More over 90% of population live in rural area. Most of people are not conscious about their health and personal hygiene which lead to many systemic diseases like skin diseases, tuberculosis, cholera etc.

It is found that 'PAMA' (scabies) disease is one of the commonest disease observed in low socio economic class and occurs in persons who don't take bath regularly and do not follow guidelines of hygiene.

The signs symptoms, pathogenesis and treatment of Pama are very well described in Ayurvedic texts. This indicates that diseases affecting people since ancient times.

'Pama' vyashi (Scabies) affects person's daily workschedule due to itching and burning sensation (kandu and daha respectively) Pama is correlated with scabies.

Scabies is contagious affection of the skin characterized by the development of vesicles, pustules & other lesions on the skin caused by animal parasite *Sarcoptes scabiei*. An adults

female mite measures approximately 0.4 mm in length has four sets of legs and has a hemispheric body marked by transverse corrugations, brown spines and bristles on the dorsal surfaces. A male mite is approximately half her size and is similar in configuration after impregnation on skin surface a gravid female exudes a keratolytic substance and burrows into the stratum corneum.

Materials & Methods :

The drug Gandhakadi yoga is mentioned in the book Yogaratnakara. The formation and contents of Gandhakadi yoga are given by Yogaratnakara. The Gandhakadi yoga is prepared in ointment form by using simple ointment base. It consists of

1. Shuddha Gandhak churna (Purified sulfur powder)
2. katu Tailam (Sarshap Tailam) (Mustard Oil)

Ointment is prepared with shuddha Gandhak churna & Katu Tailam (Sharshap Tailam) (Sulfur & mustard oil) having base of

Wool fat - 50 gm

hard paraffin - 50 gm

Cetostearyl Alcohol - 50 gm

White Soft paraffin - 850 gm

Manufacturing process - Gandhakadi Yoga ointment was prepared by Trituration Method.

Standardization of the drug. Gandhakadi yoga in ointment form was prepared in pharmacy college under expert supervision. Additionally sample was sent for physiochemical analysis to lab. of Ayurveda Seva Sangh, Nashik

Methodology :

For clinical trial a special case proforma was prepared. Case proforma including complete examination & follow up visit's were documented. 60 patients were selected randomly on O.P.D. basis of Arogyashala Regnalaya, Nashik Patients were selected according to inclusion and exclusion criteria as given below.

Group A - 30 Patients treated with topical use of Gandhakadi Yoga for 3 days.

Group B - 30 Patients treated with topical use of Kapila churna & Karanja Tailam for 30 days.

Inclusive Criteria -

Age - 10 th 70 Yrs.

Sex - Both (Male & Female)

Patients having textural sign's & symtoms of PAMA i.e.

Pitika with - Kandu (Vesicles with itching)

- Srava (discharge)

- Doha (burning sensation)

Exclusive Criteria -

Age below 10 Yrs & above 70 Yrs.

Secondary infected Scabies.

Known case of leprosy.

Dose - As required for local application.

Method of Application

Group A - Gandhakadi Yoga ointment was applied (Below the neck)

Duration - for 3 days & observation for 30 days in the night.

Group B - Kapila Churna (powder of kamala - *Mallotus philippinensis*) thoroughly mixed equal proportion of karanja tailam (pongamia oil) for application. Duration - 30 days in the night.

Parameter subjective

Pitika (Vesicles) with - Kandu (itching)

- Srava (Discharge)

- Doha (Burning sensation)

Criteria for assessment of Result.

0 - Nil

+ - Mild

++ - Moderate

+++ - Severe

1) Kandu (itching)

+++ - Itching continuous throughout day and night

++ - Intermittent itching more than 5 times a day

+ - Itching once or twice a day

0 - No itching

2) Srava (Discharge)

+++ - Discharge with foul smell

++ - Serous discharge without foul smell.

+ - Watery discharge

0 - No discharge

3) Daha (burning)

+++ - Severe

++ - Moderate

+ - Mild

0 - Absent

Total effect of therapy

1) Cured : Total relief in cardinal symptoms.

2) Markedly Improved : 50% or more average improvement in signs and symptoms.

3) Improved : Improved range in between 25 to 50% responded by patients in signs and symptoms.

4) Unchanged : Those patients presenting less than 25% improvement in their signs and symptoms.

Observation & Statistical Inferences

There were 60 patients studied in two groups each group containing 30 patients. 36 patients (60%) were male & 24 (40%) patients were female. According to age maximum patients (33.33%) were in the age group of 10 to 20 yrs. All the patients were having complaints of Pitika (vesicles) with kandu (itching), Srava (discharge) & daha (burning sensation) (100%). Patients of both the groups were observed on 3rd, 10th & 30th day & observation were recorded. Statistical test X² was applied. Values of the test were significant in symptoms of Kandu (itching), Srava (discharge) & Daha (Burning sensation).

Discussion & Probable mode of action of Drug

In Gandhakadi Ointment Shuddha Gandhaka (purified sulfur) and Sarshap Tailam (mustard oil) are the main ingredients. In traditional medicinal Skin treatment which predates modern era of scientific medicine elemental sulfur has been used mainly as part of creams to alleviate various conditions.

The mechanism of action is not known although elemental sulfur does oxidize slowly to sulphurous acid which in turn (Through the action of sulfite) acts as mite reducing and Scabidical.

Sarshapa Tailam i.e. Mustard oil mainly contain erucic acid 40% and Oleic acid 12%. The main ingredient of Mustard oil is Allyl - Iso Thiocyanates and acts against Scabies parasite.

It is derived from enzyme myrosinase and Glucosinolate known as Sinigrin from seed of Mustard produces allyl iso thiocyanate.

Sulfur & mustard oil do not have any antihistaminic activity but in this particular study it has been observed that symptoms like pruritus are reduced. This may be due to the action of Sulfur and Mustard oil on life cycle of mite.

Conclusion

From this clinical study following conclusion can be drawn. Gandhakadi Yoga (ointment) is effective for the treatment of PAMA i.e. scabies as statistical analysis proves the same.

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Environment :

Purifying Your New House

Home purification ceremonies are considered an integral part of Indian culture and ethos. They clear negative vibrations and energy from the house. Shahin Ashraf Ali suggests a few house purifying ceremonies for home owners that can bring positive energy to their new adobe.

A new home heralds new beginnings, changes and challenges in various areas of life. Little wonder then, that almost every religion and culture attaches great significance to the purification ceremony of the new house. This ceremony clears negative vibrations and energy from the house. Apart from the purification rituals prescribed by your religion, there are several types of ceremonies/rituals that you can perform. The following are some house purifying ceremonies you may opt. for.

Water

Since time immemorial, water has been revered as a powerful purifying element. Fill a bowl with ordinary tap water. Then, either leave it in the sunlight for 3-4 hours or place a clear quartz crystal in the bowl and let it remain for a day. Your water is charged and ready for the ceremony. Hold the bowl and your hand, pray to the Almighty and set your intent for purifying the space in your new house. Walk around the house flicking the water from the bowl with a sprig of fresh leaves. Sprinkle more water in dull corners. Continue with your religious chanting as you go around the space.

Fire

Fire is a potent cleanser. Offer your prayers. Light an incense stick or burn lobhan and take it around the house chanting mantras or verses from holy books. Wave the smoke into every corner and wish good health and happiness in your new house for your family.

Salt

Salt is widely believed to be a potent purifier. Sprinkle sea salt in piles in corners or around the room and leave it overnight; it soaks up negative energy of your home. In the morning, sweep it up and take it out of the house to get rid of the negative.

Sound

Sound moves energy and can be used to purify your new home. After offering your prayers and setting the intent, use a sound technique you resonate with. Some prefer clapping around a room, holding a strong positive thought for the space, while others go around the new house ringing their prayer bell. The deep rhythmic sound of a drum is upheld for creating higher energy level in a space. Other than instruments, your own voice can be a very powerful

purifier. A ceremony that involves chanting, intoning or singing in your new house will surely bless it with positive vibrations.

Plants' Essential Oils

Go around each room praying and misting the space, using diluted aromatherapy oils. Pay special attention to corners where energy tends to stagnate. Plant's essential oils are wonderful fragrant purifiers.

Spring - Cleaning and painting

If you are moving into a house that had occupants before you, then the most effective way to clear out the old negative vibrations left behind by the previous inhabitant is to give the house a thorough spring - Cleaning and a fresh coat of paint. The ideal time to do this is while your new home is still empty. Keep the windows and doors open for sufficient time, allowing the sunshine and fresh air to bring in positive vibes.

Announcement

Deerghayu International a the peerreviewed quarterly journal for ayurveda & health sciences since 1984 is happy to announce following award.

Best Research Paper award 2013

Quantitative assessment of muscle fatigue with the help of Mosso's Ergograph and its co-relation with Ayurvedic concepts in charak Samhita.

Prof. Dr. Mrs. Kavita V. Indapurkar (M.D, Ph. D) professor and head of Department of Kriyasharir, Bharati Vidyapeeth University, College of Ayurveda, Pune.

DI. Vol. 29, Issue No. 114, April - June 2013

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Anouncement

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President : Prof. Vaidya Mauricio Leon - Santiago Chile

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Casestudy Of Bowen Therapy

This is to inform you that I Mr. Dilip Chandak was about to undergo a big slip disc surgery, but was saved by the wonderful Bowen work. A few years back I fell somewhere and did not realize it at that time that it would end up in such a big issue. I just ignored it. But suddenly the pain started increasing. So I went to the orthopedic surgeon for the check up and he told me to take an X-ray and MRI and after when the reports were out, he told me about the slip disc. My disc had come out. First he suggested me to undergo traction and physiotherapy.

But as I was worried, I consulted few more orthopedic and neurosurgeons. But everyone said that you have to get operated as early as possible as you would not even be able to move from one place to other. And as the days were passing, I started realizing the pain. The pain increased and it was really difficult for me to even walk. I was almost bedridden. So finally doctor suggested me to get admitted in Poona Hospital and I was undergone a course of traction of almost 16 kg's for 7 days. I was relieved a bit because of traction, but later I realized that it's a temporary effect as it again started paining after those 7 days of traction. Then doctor asked me to be on traction for almost a month at home. But it did not help me. My pain was the same. So by looking at this condition, Doctor decided to get the surgery done. But just two days before the surgery, one of my friends called me and told me about Bowen Therapy and its effect. So I just thought of giving a try and I went to Zenobia and had my first Bowen sitting.

Before the sitting I was not even able to walk, but immediately after the first sitting I could realize the effect. I started walking on my own without taking the support. That was a miracle. So after the great effect of first sitting, I decided to continue with Bowen Therapy and operation was cancelled.

Now after 6 sittings, I am almost fine. Sometimes, I get jerks if I am riding the bike, but then again I take a Bowen sitting in 2 months and it relieves the pain. After such an effective therapy, I sent almost 50 more clients to Zenobia and even they found the therapy effective for their particular cause. So I would like to thank Zenobia for my recovery and the great Bowen work she has taken up.

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An Appeal

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The widened horizons of Deerghayu International, now covers everything that is concerned with Ayurveda, other Health Sciences and related Sciences Disciplines.

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- Case Studies (Maximum 500 words)

Arial or Times New Roman (12 pt) is the preferred font and all parts of the manuscripts should be typed double spaced.

Submission and Review procedure

All the manuscripts should be sent as an email attachment to deerghayuinternational@gmail.com with a covering letter indicating author and co-authors, their designation and institution alongwith the email ids. After the review process, the manuscript will be sent to the corresponding author if there are any corrections or queries. Once the queries are answered by the corresponding author, then it will be finalized and published in Deerghayu International.

Preparation of Manuscripts :

- Original text must be printed in good English on laser printer, double spaced on 8.5x11 inch/A4 size paper on one side only.
- Typed scripts must be reviewed carefully for grammar before submission.
- The general arrangement of the paper should be on Title page, Abstract, Introduction, Materials and Methods, Result and Discussion, Conclusion, Acknowledgments and References. (For review Title page, Abstract, reviewed reports, conclusion, acknowledgment and references.)
- Tables, Figures or other illustrations should be on separate page with suitable title and number.

- An electronic version must be submitted alongwith the two hard copies of manuscript. Submit biodata and photograph of author. Send as E-mail.
- Two independent reviewers, will evaluate all papers for scientific content. However any part of the published manuscript, is a responsibility of the author (s)
- Acceptance or Rejection of the manuscript will be informed to the corresponding author within 30 days of receipt of the manuscript.
- Authors should submit DD/Cheques of Rs. 1200/- (or 50 USD) in favour Deerghayu International, payable at Pune towards consideration fee. or deposit in Bank account UCO Bank, Kothrud Branch, near Post Office. Bank Account no. 14690200000611. IFSC (India Financial System Code) of the bank UCBA 0001469. MICR (Magnetic ink character recognition) code of the Bank - 411028011. Telephone No. of Bank - 91-20-25380076.
- In case of rejection of manuscript, 50% of the consideration fees will be refunded to the corresponding author alongwith the copy of manuscript.
- Submission of an article to Deerghayu International is understood to imply that it is not being communicated for considered for publication elsewhere.
- The editorial board has decided to honour the best research paper of the year. The corresponding author of the selected best research paper will be awarded certificate of merit.

References be written as follows e. g.

- Journal : Marklund, S, Marklund G. "Involvement of Superoxide anion radical in the auto-oxidation of pyrogallol and convenient assay for Superoxide dismutase" Eur. J. Med. 1977, 13 (3), 34-5 (Use et al for more than three authors).
- Book : Shoba J. D. David B. The principles and practice of medicine. Prentice Hall International Inc. 23rd Edn. Pp - 778-81
- Patents : Patent owner, title of patent. Patent number, date.

Key to Transliteration

All the non-English words should be written in conformity with the international diacritical marks.

Key to transliteration is given for ready reference.

अ	→	आ	→	इ	→	ई	→	उ	→	ऊ	→	ऋ	→	ॠ	→	ए	→	ऐ	→	ओ	→	औ	→	अं	→	अः	→	त्र
a	→	ā	→	i	→	ī	→	u	→	ū	→	ṛ	→	Ṡ	→	e	→	ai	→	ō	→	au	→	am	→	aṅ	→	tra
क्	→	ख्	→	ग्	→	घ्	→	क	→	ख	→	ग	→	घ	→	ङ	→	च	→	छ	→	ज	→	झ	→	ञ		
k	→	kh	→	g	→	gh	→	ka	→	kha	→	ga	→	gha	→	ṅ	→	ca	→	cha	→	ja	→	jha	→	ña		
ट	→	ठ	→	ड	→	ढ	→	ण	→	त	→	थ	→	द	→	ध	→	न	→	प	→	फ	→	ब	→	भ		
ṭa	→	ṭha	→	ḍa	→	ḍha	→	ṇa	→	ta	→	tha	→	da	→	dha	→	na	→	pa	→	pha	→	ba	→	bha		
म	→	य	→	र	→	ल	→	व	→	श	→	ष	→	स	→	ह	→	ळ	→	श्च	→	ज्ञ						
ma	→	ya	→	ra	→	la	→	va	→	śa	→	ṣa	→	sa	→	ha	→	ḷa	→	śca	→	jña						

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Reserach Paper

Effect of Hemidesmus indicus (Anantmoool) Extract on IgG production and adensine deaminase activity of human lymphocytes in vitro

R. P. Kainthla, R. S. Kashyap, J. Y. Deopujari, H. J. Purohit*, G. M. Taori,
H.F. Dagainawala

ABSTRACT

Objective : To investigate the effect of Hemidesmus indicus extract on activities of human peripheral blood lymphocytes in vitro.

Material and Method : The total extract of the raw herb was obtained by methanol : isopropyl alcohol : acetone extraction, and used at different concentrations. Human peripheral blood lymphocytes (PBLs) were isolated, stimulated to proliferate using phytohaemagglutinin (PHA) or lipopolysaccharide (LPS), with and without different concentration of herbal extracts. Adenosine deaminase (ADA) activity and immunoglobulin (IgG) secretion from cultured PBLs were studied with the herbal extracts and appropriate controls.

Results : Hemidesmus indicus extract stimulated the cell proliferation at 1 mg/ml concentration significantly, after 72 h in culture. Viability of extract - treated PBLs was also maintained after culture. The extract increased the IgG production from cultured PBLs when used at 1 mg/ml concentration. It also increased the ADA activity of PBLs after 72 h in culture.

Conclusion : An immunomodulatory activity of H. indicus, related to IgG secretion and ADA activity, is revealed during the study. The herbal extract has shown to promote the release of IgG by lymphocytes, and also the ADA activity after 72 h of culture.

Bhagwan Shri Dhanwantaree

Prof. Dr. P. H. Kulkarni

One can find many stories in old Indian literature about Dhanwantree. The name Dhanwantaree is not mentioned in four vedas. One can come across the name in the compendias like puranas, Ramayana, Mahabharat. It is described in Ramayana & Mahabharat that Dhanwantaree surfaced after churning of ksheerSagar (milk ocean). He was expert in Ayurveda. Dhanwantaree first appeared in white out-fit with nectar pot - Amrut Kumbha in one hand. Dhanwantaree was the first to bring necter/Amrut on this immortal world. Then Shri Vishnu requested, invited Devas (gods) and Danavas to have a lunch. But Shri Vishnu served Amrut to Devas only.

Other products appeared after ocean churning and distributed, ascribed to different Devas e.g. Dhanwantaree was allotted to sun (Bhaskar) both well expert knowledgeable in Ayurveda. Dhanwantaree became the desciple of sun. Later on Shri Dhanwantaree became first god of three Lokas (worlds). Afterwards it is believed that Dhanwantaree is incarnation (Avatar) of Shri Vishnu and worshiped

Other story one can read in puranas e.g. Skanda, Garuda, Markandeya. Once upon a time Galav sage (Rushi) was travelling. During travel he became thirsty and was in need of water. Galav saw a beautiful girl known as Veerbhadra walking with a water pot. She was vaishya (Vaniya) by birth. Sage requested her to have some water for drinking. Veerbhadra offered him water with flashing smile. Galav and veerbhadra married in due course of time. She gave birth to a male child their only son. The child was expert in many vidyas/shastras (Sciences) since childhood. Son of Veerbhadra completed study of Ayurveda with Ashwini Kumar, the twin physician and surgeon of devas, gods. Afterwards he became famous with the name of Dhanwantaree. Dhanwantaree married with daughter of Ashwinikumar. Then Dhanwantaree became leader of group of vaidyas. This is the starting point of vaidya parampara - The tradition.

We come across following information in the sushrut samhita. King of Kashi Desha (Varanashi) known as Divodas. He was teacher/Guru of Sushrut. Divodas declared himself as Aadideva Dhanwantaree. He was incarnation/Avatar of Shri Dhanwantree. He propagated Ayurveda at his best. He used and taught surgery/ShalyaShalakya in his daily practice. Gave relief from diseases with surgery was his branch, line of treatment, this was well propagated in the society. People who were treated with surgery was known as Dhanwantaree Sampraday. The tradition.

Emperor Chandragupta the second Vikramaditya has a Rajvaidya by name Dhanwantaree in his court. It was in fifth century A.D.

According to Author Bhavmishra Aadideva Dhanwantaree was incarnation of Shri Vishnu. Dhanwantaree took birth/avatara as Raja Divodas of Aim of this Avatar was propagation of Ayurveda. After many centuries the title of Dhanwantaree was awarded to best Ayurveda

physicain. Many aspects were scrutiuised before crowning the title of Dhanwantaree.

Following books are in the name of Dhanwantaree :

1) Chikitsa Darshan 2) Chikitsa Kaumudi 3) Chikitsa Sar Sangraha 4) Yog Chintamani 5) Sannipat Kalika 6) Dhatukalpa 7) Ajeerna Amruta Manjiri 8) Rognidan 9) Vaidya Chintamani 10) Vaidya Prakash 11) Vaidya Bhaskara Udaya 12) Dhanwantaree Nighantu. It seems that some other persons wrote these books afterwards in the name of Dhanwantaree and circulated every where.

Shree Dhanwantaree is with two hands. In left hand he holds nectar pot and with right hand he is blessing. Such statue, Sculpture, portrait, pictures, photo one can see at many places. Shree Dhanwantaree is a perfect symbol of total health. It is recognised as god of wellness. He is worshiped on 13th day of Ashwin Vadya before Deepawali every year. At some places people, associations, organises lectures, some people observes festivals.

We are teaching Ayurveda in marathi & English for more than five decades. Information of Dhanwantaree narated and circulated everywhere. When I was in school, I read about Dhanwantaree from the books by Pt. Satavalekar in marathi also from Kalyan magazine in Hindi language. When I admitted to Ayurveda college of Pune University I learned about Dhanwantaree in Sanskrut language.

I saw few pictures of Dhanwantaree. When I was working as news correspondent in 1958. I first saw Dhanwantaree Statue at the entrance of Armed Forces Medical college at Pune. We could see Dhanwantaree with two hands in 1961 when new building of Tilak Ayurveda College, Pune were constructed. When we friends started our clinics we performed pooja of Dhanwantaree picture published by Dhootpapeshwar company of Mumbai.

In 1983 at the time of publication of Marathi Charak Samhita, Sagar prepared a picture of Dhanwantaree with the help of an artist and distributed every where, all over the world. The Dhanwantaree pictures presentated to each Ayurveda book by P. H. Kulkarni upto 2010. Also distributed at the time of forty International Ayurveda conferences. Clay and metal statues where distributed every occasion by National Integrated Medical Association from 1974 to 1983. Later on by Institute of Indian Medicine and from 1995 on behalf of Ayurveda Academy. Clay statues made available from Pune, Pen & Kolhapur from Maharashtra state. We presented Danwantaree statue to each & every Ayurveda centre across the world.

Dhanwantaree stawan is generally sung at the begining of any function and at International Conferncses. In Kulkarni family it was sung by Mrs. Vibhavaree, Sagar, Rohit, Vedang, Atharva from 1983 to 2010. Audio recordings of Vibhavari, Sagar & Rohit were provided to all centres for their routine use, especially at the begining of lectures, courses, seminars etc. In Italy at one old Church Dhanwantaree is being played along with Gayatri Mantra for many years from 1999. Dhanwantaree pictures stresses the importance of use of plant Kingdom, counc etc. from sea, amrut & in some cases by using surgical interventation. On hearing prayer of Dhanwantree every cell of the body receives the health message. Group of cells work better for longer period. Ultimately person becomes more healthy & lives longer. (Deerghayu). This message of Dhanwantree transcends to new generation of cells and chain remain unbroken.

The un-interrupted light of health remains on this earth forever and every person be happy & healthy everyday.

Research : Experiment Laboratory

“MORPHOLOGICAL DIFFRENCES IN RBC OF DIFFERENT ANIMALS IN RELATION TO HUMAN”

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ABSTRACT

The cells of the blood include the red blood cells and the white blood cells. In all vertebrates, except nearly all mammals, the red blood cells or corpuscles contain a nucleus and cytoplasm rich in hemoglobin. In nearly all mammals the nucleus has been extruded during the developmental stages. Blood analysis plays an important role in investigation of crime cases related to human and animals. This analysis is done in forensic biology and serology division of FSL. Blood is a suspension and solution of various materials in water. Liquid portion of blood is plasma that contains proteins, carbohydrates, fats, salts, minerals and antibodies. RBC, WBC and Platelets are suspended in blood. The cells in blood have peculiar characteristics and morphology. These characteristics and morphology changes from species to species. So a variety of animals RBC are observed and compared with human RBC with respect to their size, shape, diameter and peripheral area, in order to show the differences in the morphology of the cell. Our study will be helpful in detection of wild life animal species in cases of poaching, hunting and smuggling of their body parts. The study will provide support to law enforcement agencies for effective implementation of Indian Wild Life Protection Act 1972.

Key Words: Forensic, Morphology, RBC, Wild life, Blood

Introduction

Forensic science is the science of crime detection, law and justice. Wildlife forensic is a relatively new field of criminal investigation its goal are to use scientific procedure to examine, identify and compare evidence from crime scene, and to link this evidence with a suspect and a victim (specially an animal). Killing wild animals that are protected from hunting by law (Wildlife Protection Act 1972) also called poaching is one of the most serious crimes investigated by wildlife forensic scientist. Although species could be identified by DNA based technique, but these are very costly. One major problem for dealing with tissue samples are most of the samples are not preserved and it is not possible to use normal electrophoresis techniques for the species identification. Blood analysis can overcome these problems.

Wild life forensic is the new field of investigation, its goal are to use scientific procedure to examine, identify, and to compare evidence from crime scenes and to link this evidence

with a suspect and the victim, which is specially an animal. Other crimes against wild life include buying and selling product made from protected animals.

The types of evidential material analyzed by a wildlife forensic laboratory includes any part of animal including blood and tissue samples, hair, teeth, bones, claws, talons, tusks, fur, feather, processed skins, canines, nails, whiskers, bones, musk pod, meat, antlers, horns, etc.

One of the most critical problem facing by wildlife forensic scientist is identifying particular species from crime scene evidence for e.g.- wildlife forensic scientist may have to distinguish if a piece of leather on a watch hand is made up of a particular animal elephant or a zebra or sourced from non protected animal cow or a goat. Pathologist examines carcasses for wounds in order to determine how the animal died and to distinguish natural death³

According to the wildlife protection act 1972 refers to a sweeping package of legislation enacted in 1972, by the government of India. Animals include amphibians, bird, mammals, and reptiles and their young ones and also include in the cases of birds and reptiles and their eggs.

Any biological materials collected from crime scene are forwarded to the nearest FSL. At FSL examination such as physical, chemical, physiological, microscopic, spectroscopic, immunological and enzymological are carried out. They are useful in following way.

Physical examination- Pattern of blood stains.

Chemical examination- Provide whether the stains are of blood or others.

Physiochemical examination- TLC and electrophoresis techniques confirm stains of blood.

Microscopic (Micro-chemical examination) - To test presence of haemoglobin by Takayama's Haemochromogen Crystal Test and Haemin Crystal Test.

Spectroscopic examination- Shows characteristics absorption bands when viewed through spectroscope.

Immunological methods- For detection of species origin whether human, animal, amphibians etc.

Enzymological methods- For differtiation of human beings as well as different species of animals.

At FSL blood is first identified for human or animal origin, this is done by Precipitin tube test, Gel diffusion, Crossed over electrophoresis (COE), Disc electrophoresis. Most commonly used is COE. After origin identification further analysis are decided by the forensic scientists⁴.

Animals taken under our study

Mammals

1. Human 2. White Tiger, 3. Lion 4. Bullock, 5. Buffalo 6. Goat

7. Sheep 8. Rabbit 9. Horse 10. Guinea Pig 11. Dog

Avian

1. Hen

Reptiles

1. Lizard

Amphibians

1. Frog

Aquatic

1. Fish

Above animals were taken as these animal cases under Wildlife Protection Act are very often forwarded to forensic science laboratories in our country. The blood samples of wild animals were taken by prior permission of Zoo authorities without any harm and after their physical examination by veterinary physician

Materials and Methods²

Materials

- a. Leishman Stain
- b. EDTA Bulb
- c. Different size of sterile needle and syringes

Method Collection of Blood

Human- Venous blood collected from the median cubital vein of arm with 24gauge needle.

Lion, Tiger - Venous blood collected from the tail with 18 gauge needle

Bullock, Buffalo, Horse, Goat, and Sheep- Blood collected from Jugular vein in the neck region with 18 gauge needle ⁵

Dog- Blood collected by femoral vein puncture with 18 gauge needle ⁵.

Rabbit and Guinea pig- Marginal ear vein puncture with 22gauge needle⁶.

Lizard and Frog- Blood was collected by heart puncture by 20 gauge needle⁷.

Fish- Blood was collected from caudal vein or by heart puncture.

Hen- Blood was collected from the Alar venipuncture⁸

Preservation of blood

Preservation of blood was done with the help of EDTA bulb

Observation

Sr.No	Animal	RBC Image	Radius(μm)	Morphology of RBC
1	Human		18.95 \pm 0.75	Rounded, Biconcave disc, Non-nucleated
2	Lion		3.26 \pm 0.61	Rounded, Non-nucleated
3	Tiger		15.26 \pm 0.75	Rounded, Biconcave, Non nucleated
4	Dog		4.8 \pm 0.17	Rounded, Non-nucleated
5	Bullock		16.5 \pm 1.98	Rounded, Biconcave, Non nucleated
6	Buffalo		10.4 \pm 1.06	Rounded to Octagonal, Non-nucleated
7	Horse		38.33 \pm 0.75	Rounded, Non-nucleated
8	Lizard		Major Half Axis =33. 27 \pm 2.27 Minor Half Axis =19.69 \pm 1.13	Elongated, Oblong, oval Nucleated
9	Fish		Major Half Axis =22.52 \pm 1.68 Minor Half Axis =12.52 \pm 1.13	Oblong, oval, Biconcave Nucleated
10	Frog		Major Half Axis =31.95 \pm 2.7 Minor Half Axis =22.55 \pm 0.75	Oval, Rounded to irregular Nucleated
11	Goat		1.82 \pm 0.31	Rounded, Elongated Bean shape Non-nucleated
12	Sheep		7.15 \pm 0.75	Rounded to oval Non-nucleated
13	Hen		Major Half Axis =2.52 \pm 0.75 Minor Half Axis =18.20 \pm 1.24	Oval to oblong Nucleated
14	Rabbit		4.07 \pm 0.56	Rounded Non-nucleated
15	Guinea Pig		3.72 \pm 0.26	Rounded biconvex Non nucleated

CONCLUSION

To our Knowledge, there is no available data to compare with our results on RBCs. We consider that the morphology of RBCs in different animals is different with respect to their size (Radius), Shape, Parameter and total area. Also the presence and absence of nucleus, on this basis we can differentiate these animals upto class or species level which will be helpful in wildlife forensic crime investigation for wildlife forensic scientist.

From the presence study it is concluded that the morphology of RBCs plays an important role in identification of animal during murder cases, offences against wild and domestic animals. Also helpful in identification of species of animals and to differentiate between animal and human blood in different cases. In the present study we observed that the RBCs of each animal has its unique characteristics and can be differentiating morphologically.

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