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Research article

Hair Growth Potential of *Helianthus annuus* Seed Oil Extract and *Martynia annua* Seed Oil Extract on Albino Mice

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ABSTRACT

The surface scalp of hair matrix cell differentiation during migration is induced by vigorous proliferation, which results in hair growth. The objective of the current investigation was to explore the need to know about *Helianthus annuus* seed oil extract and *Martynia annua* seed oil extract as a potential for hair growth. In albino mice, on the back skin surface, prepared oil extract was spread to assess the telogen to anagen phase transition. The quantitative and qualitative analysis was performed and observed. The outcomes of their research revealed that *H. annuus* seed oil extract of petroleum ether and *M. annua* oil extract of petroleum ether exhibited prominent activity in combination. In different dosages of petroleum ether oil extract of both plant combinations of dosage applied topically 10, 20 and 30 mg/mL to the shaved skin of albino mice treated groups observed for 21 days. The results showed that both plants' petroleum ether oil extract in combination showed significant hair growth potential in a different dosage-dependent manner, particularly in albino mice. Albino mice groups treated with petroleum ether 30 mg/mL of both plants required a shorter time to the control (positive) group and 2% minoxidil (standard) group at different growth stages. The hair length of albino mice treated with petroleum ether 30 mg/mL oil extract of both plants showed a remarkable increase of 21.35 ± 0.25 mm. and the thickness of hair of albino mice group treated with a combination of both plant oil extract is 0.020 ± 0.0010 mm with respect to 2% minoxidil (0.021 ± 0.008). These findings suggested that *H. annus* seed oil extract and *M. annua* oil extract have the potential of show hair growth.

Introduction

In the differentiation during migration, hair matrix cells to the surface of the scalp is induced by vigorous proliferation. The skin's most important part is ectoderm, which produces hair in our body. In animals and the human body, beings are often considered one of the protective appendages.[1] It markedly affected human and animal bodies to show overall good.[2] The skin produces hair, especially if it is made up of protein like creatinine. The skin produces hair at a rate of 6 inches a year. The follicles continue to produce new hair cells and old hairs through the surface of the skin. In fact, we can see that the skin's surface is nothing but a string of dead creatinine cells of the hair.[3] On average, 100 more hair falls each day in adults about 100,000 to 150,000 hairs, respectively.[4]

The main curse of the mankind is alopecia or baldness of hair on the head, which belongs to a dermatological disorder that has been known for years back. In the men and women observed in both populations have the genetic condition of androgenic alopecia. The types of balding scalps in the man types I-VIII are well-known classifications proposed by Hamilton.[5]

In the male pattern baldness, the teen ages or early 20s commonly start experiencing hairs thinning and hair ruff., especially on frontal scalp from crown or head have observed gradual hair thinning. In women in their 40s or later, the opposite, female means women suffering pattern receding usually can't suffer from hair loss and thinning of hair. In particular, at the crown the female experienced hair thinning and hair loss over the entire

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scalp with a much wider spread. Alopecia is treated by only two drugs on different dosages like oral and topical of finasteride and minoxidil, approved by the Food and Drug Administration (FDA) of India and the United States. The research observed that of new hair growth potential. Moreover, these drugs do not have side effects (s).[6]

The current Indian system of medicine, traditionally, many more herbal formulations has been recorded in many research articles which is for hair growth potential and hair growth and quality and quantities of hair from large number of plants, herbs and herbal formulations. Many author research papers have been based on sound scientific data shown in studies and supportive evidence of their entire information found in limited usage.[7] Many more of plant extract and their chemical constituents have been traditionally and scientifically claimed for their effectiveness in the treatment of hair fall and alopecia in the current drugs. However, the current study taken on hair growth potential activity of *Helianthus annuus* seed oil and *Martynia annua* seeds oil. That's because it is current study mainly focused on their mindset in the scientific research for growth potential of hair of *H. annuus* seed and *M. annua* seeds.

H. annuus is an annual dicotyledonous herbal plant that belongs to the family Asteraceae. It is widely distributed in North America, Eastern Europe and, Northern China and north India and East India. *H. annuus* roots stems, leaves and seeds contained phenols, flavonoids and alkaloids, and seeds also contain 36 to 42% oil and are naturally rich in linoleic acid (56–70%) and consequently poor in oleic acid (21–25%). Two different fatty acids are assets to our strands: Linoleic acid and oleic acid. In hair, water loss is controlled, and a healthy scalp is maintained, and linoleic acid stimulates hair growth. Oleic acid has also the advantage of hair which control water loss in hair and hydrates long term then hair looks softener and shiny.[8] In previous studies, *H. annuus* florets were found to be phenolic acid and fiber. *H. annuus* petals were found to have triterpenes glycosides, which show anti-inflammatory activity on the body. The ethanolic extract of *H. annuus* seeds has the potential in type 2 diabetes mellitus to show anti-diabetic activity. The aqueous extract of *H. annuus* seeds has the potential to reduce asthma and high anti-oxidant activity. The *H. annuus* herbal plant have been discarded because of a lack of studies focusing on its commercial application.[9]

M. annua Linn is an annual glandular hair plant that belongs to the Martyniaceae/Pedaliaceae family. That grows erected branched. Their leaves are opposite, roughly ovate to deltoid in shape size, with a cordate base, sharp apex, and repand-dentate edges. Flowers are huge, foxglove-shaped, pink and dark-purple blotched with yellow within, and are produced in racemes of 11 to 20 flowers. The fruits are hard, the seeds are woody with their two-sharp recurved hook, and the seeds oblongs. Leaves are kidney-shaped, opposite with reni form lamina, 16 to 23 cm thick, lancelets, alternate rounded notches and lobed, flaccid, apex acute, heart-shaped, difference between in tooth to shallow-sinuate, shape like open palm, petiole 09 to 14 cm long, glandular hair on the top of sticky present on both lower and upper leaf blade surfaces.[10]

M. annua is an herbaceous, sturdy, erect, branching, clammy pubescent, annual plant with dense glandular sticky hairs growing to a height of 0.25 to 1 m. The stems are terete, and the base is frequently woody. Seed oils are used in itching and skin affections.[11] The seeds' color is brown to black and flat and elongated. Each pod has two seeds, which are ordinary things in the pods. Attached the central branch stem. The mouth lobes are most glandular and hairy.[12] Flowers of *M. annua* are Gaussian-shaped and pupal whitest with darkest purple, with raceme inflorescence and a foul odor. Fruited pedicels are 1 to 2 cm long, thick, and recurved. The calyx is approx. 15 to 20 mm long. The overall length of the corolla is 55 to 65 mm, with a tube length of 35 to 45 mm. The corolla is funnel-shaped and campanulate, with yellow, pink, or purple dots on the inner surface. There are two types of stamens. Their fruits have been hard, solid, bi-lobed, and woody with two sharp recurved hooks.[13]

For most of men and women is a distressing hair loss condition. The problem of cosmetics and primary health care practice is common and ever-increasing. For male and female pattern baldness, minoxidil is useful in topical dosages, whereas finasteride is used only for male pattern hair thinner baldness.[14] Their side effects and adverse effects of their drugs, *viz.* withdrawal androgenic alopecia in minoxidil and finasteride regularly used cause impotency they have limited their pharmacological data or benefits.[15]

In the current study, the main aim is to evaluate the hair growth activity or potential of selected herbs *H. annuus* seeds oil extract and *M. annua* seeds oil extract and prepare a suitable oil extract that can overcome hair growth problems in a herbal way. None of these drugs have proven hair growth activity. Herbal plants are select for the purpose on the basis of their reported activity, i.e., flavonoids induce protein formation at the hair root and vasodilators and malonic acid helps repair mechanically damage and chemically damage hair by the disulfide bonds. Both plant seeds also contain isoflavonoids, which promote hair follicle formation. So main aim is to evaluate the hair growth activity of their combination for a synergistic effect.

Material and Methods

Material Collection

Seeds of *H. annuus* and seeds of *M. annua were* collected in October from the botanical garden RKDF University Bhopal MP. Authentication by the department head of

botany, Dr. ZU H, professor of SF College of Sciences, Bpl MP. Voucher specimen no. 675/Bot/Safia/2021 & 676/Bot/Safia/2021 dated 22/10/2021

Extraction of Oil Extract from *H. annuus* and *M. annua* Seeds

After removing impurities from the seeds, dried the sample of *H. annuus* and *M. annua* seeds, then used a commercial blender for crushed seed subjected to Clevenger and soxhlet extraction methods is used, the well-powdered seeds were placed in a paper thimble and kept into the soxhlet extraction process which has been fitted tight with no leakage and handle rounded bottom flask of 500 mL with the condenser. Oil was extracted by using solvent petroleum ether on the water bath for 8 hours. Then the extraction process, the solvent petroleum ether was in rotatory evaporators distilled off the under vacuum at 45°C. Then the extracted oil was yield and weight was recorded. Then, extracted oil was in to the bottle and kept on the fridge until further analyses. In cold pressing, without any chemicals for 20 minutes with pressure 29.4 to 49.0 Mpa. [16]

Preparation Oil Extract from *H. annuus* and *M. annua* Seeds Oil Extract

In order to prepare the herbal hair oil, the two plant seeds used in the present study were dried and crushed by the combination of both plant pet. ether extracts 10 mg/mL, pet. ether extracts 20, and 30 mg/mL pet. ether extracts were prepared. Coconut oil is used as the base for the preparation of the hair oil. 10 mg/mL pet. ether extracts of *H. annuus* seeds oil and *M. annua* seeds extract oil, 20 mg/mL pet. ether extracts of *H. annuus* seeds oil and *M. annua* seeds extract oil, and 30 mg/mL pet. ether extracts of *H. annuus* seeds oil and *M. annua* seeds extract oil and coconut oil were mixed directly and continuously stirred and heated until the extracted oil was properly mixed in coconut oil. All five groups extracts prepared in group 1 have vehicles (positive control group), group 2 have a standard (2% of minoxidil), groups 3, 4, and 5 were prepared using a simple method. The first two, group 1 is the control and group 2 is 2% of minoxidil and the remaining three, group 3, group 4, and group 5 have oil extract. Petroleum ether extracts are a combination of both plant oil extract. Pillow pouches and direct boiling methods were used to prepare these hair oils. Confirmatory test of prepared hair oil extract for test were undertaken as per Ayurvedic Pharmacopoeia text.[17,18]

Animal Experiments

Test for skin allergic reaction

The experiment was performed according to protocols, and the Committee of RKDF University Bhopal approved all animal experimental protocols and data.CPCSEA (Reg. No.1693/PO/a/13/CPCSEA). All experimental procedures were reviewed and verified for approval by the Institutional Animal Ethics Committee, Vedica College of B. Pharmacy, RKDF University, Bhopal, M.P. (Reg. No. IAEC/VCP/2021/004/9). The albino mice's age is seven weeks. Their hair follicles is on the telogen phase. Albino mice were shaved with the help of like hair remover, trimmer and hair cream remover (Philips, Veet). Approval was obtained for their same, and 66 healthy albino mice weighing 150 to 180 gm were selected for the test. In the test period, every albino mice was caged individually and, foods and water were given equally and good ventilation *ad libitum*. The whole day then, firstly, to take the test hair from the albino mice back skin, each albino mice was trimmed and shaved on both sides of the spin, and the backspin saw a large test area in albino mice, which was the minimum test sites of approx 2.5 cm accommodate. And clean with sprit and distilled water.[19] The quantities measured were 10 mg/mL pet. ether extracts of *H. annuus* seeds oil and *M. annua* seeds extract oil, 20 mg/mL pet. ether extracts of *H. annuus* seeds oil and *M. annua* seeds extract oil, and 30 mg/mL pet. ether extracts of *H. annuus* seeds oil and *M. annua* seeds extract oil were applied on the test sites of one side of the spines of albino mice. After 48 hours of application on albino mice were observed for erythema and edema. The study of primary skin allergic tests revealed no abnormal effects or side effects on the treated area of the albino mice.

Hair Growth Activity Assessment with Albino Mice Model

The six-week-old selected albino mice for the hair growth experiment (150–180 g), were collected from Vedica College of B. Pharmacy Bhopal (MP). Water and pellet chow grains for albino mice are freely available. After 1 week of acclimatization, 12 hours in light-dark cycle and the humidity controlled and maintained (50 ± 5%), with dark light cycle for 12 hours. An experiment was performed with following all protocols. The Committee approved all animal experimental protocol data. Vedica College of B. Pharmacy, Bhopal (MP). IAEC as per CPCSEA. The albino mice are seven weeks old, and their hair follicles are in the telogen phase. Albino mice were shaved with hair remover, trimmer and hair remover cream (Veet, Philips trimmer). The albino mice gave and spread route topical application of the control group 1, 2% minoxidil group 2. The rest of the three groups is tested in combination with extract oil of *H. annuus* seed and *M. annua* seeds with the solvent petroleum ether per day for 21 days. The backspin skin of the albino mice was taken photo at days 0, 10,12, 16 and 21, and the hair was randomly plucked and measured at days 12, 16 and 21 days in Fig. 1. [17]

Percent growth of hair growth was given as follows: 0 = no growth; After 10 days = less than 20 % growth; After 12 days = 20 to 40% growth; After 16 days = 60 to 80% growth; After 21 days = 80 to 100% growth

Fig. 1: Observation of hair growth in albino mice of various days

Hair weight determination

Hair weight determination after the 12th day, the whole tested area is not covered with the hairs, then after 20 days, we determined the hair weight of new hairs. In 21 days, hair is collected from the treatment area of albino mice, where 25 hairs were weighed and calculated in mg. The results were shown as the average weight of hair ± S.D. After 21 days albino mice were sacrificed by cervical dislocation. The selected albino mice from each group of 0.4 cm^2 dorsal skin cut the same area and measured the skin without hair and with hair; the hair weight were determined.[20]

Hair thickness determination

The thickness of hair on albino mice were determined by the process where albino mice is dislocation of cervical after sacrificed in the period of 21 days of treatment. At the end of treatment after 21 days each group albino mice spin treatment area hair was plucked from sterile forceps, i.e., control, standard (Minoxidil 2% solution) and the solvent petroleum ether extract oil combination of both plants. The micrometer determined Each group's thickness, which was 0.01 mm in size. The hair determined the thickness of hair plucked with a minimum 25 hairs and collected for all of the groups and it was observed and recorded. It was observed and determined to show significant hair thickness.[21]

Results and Discussion

Phytochemical Screening

Phytochemical screening of *H. annuus* seed oil extract and *M. annua* seed oil extract showed terpenoids, linoleic acid, steroids and flavonoids. The hair growth effect showed early telogen to the anagen phase transition. Results were showed that petroleum ether oil extract of a combination of *H. annuus* seed oil extract and *M. annua* seed oil extract, control group and minoxidil group have grey skin on the surface of albino mice spin on day 7 and visible hair shaft after on 12 days of depilation. Solvent extract petroleum ether of a combination of *H. annuus* seed oil extract and *M. annua* seed oil extract and 2% minoxidil treatment group showed increased hair shaft when compared with a vehicle control group. Petroleum ether is a combination of *H. annuus* seed oil extract and *M. annua* seed oil extract with treatment of 50 and 100% concentration. Hair length was determined from day nine until the last treatment of groups.

Albino mice treated with petroleum ether of a combination of *H. annuus* seed oil extract and *M. annua* seed oil extract and minoxidil both presented significant hair growth with respect to hair length. The result indicated that petroleum ether of combination of *H. annuus* seed oil extract and *M. annua* seed oil extract significantly potential hair growth with the dependent manner of dose. Results showed that albino mice treated with petroleum ether of combination of *H. annuus* seed oil extract and *M. annua* seed oil extract (50 and 100%) observed with hair length 21.35 ± 0.25 mm of dose with petroleum ether oil extract of combination of *H. annuus* seed oil extract and *M. annua* seed oil extract 30 mg/mL. Significant hair growth was observed compared to the control (8.91 ± 0.33 mm), and the standard shows 23.24 ± 0.82 mm of albino mice. These data suggested that petroleum ether a combination of *H. annuus* seed oil extract and *M. annua* seed oil extract is the most potent agent for hair growth promoter and potential and is thereby used in the term of hair growth potential.[6, 20]

Hair Growth Activity Assessment with Albino Mice Model

The effect of petroleum ether oil extract combination of *H. annuus* seed oil extract and *M. annua* seed oil extract in different dosages amount the hair cycle was examined to determine and record whether the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seeds oil extract has promoted hair growth *in-vivo*. The petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract is topically administered daily to the albino mice for 21 days. Day after day, treatment can happen daily, and then the hair growth is visible to be much darker than the spin of albino mice. After a week of treatment with a petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seeds oil extract, new hair growing is visible on the back skin of albino mice. In the control group, no visible hair are seen on spin of albino mice. After the treatment of 10 days spin of albino mice changed in color of area where shaved. After 12 days the development of hair in the control (positive) group was in anagen phase, then the tip of hair shaft or hair scalp was in the epidermis of the skin layer. The hair growth length was longer, and the colors were conditioned on the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract, which treated albino mice. The hairy areas in the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract treated albino mice were grown much faster than those of the control (positive) groups, the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract was consider to produced hair growth by induction of the hair cycle phase in the anagen phase. Hair density was increased by 50% in the petroleum ether combination of *H. annuus* seed oil extract and *M. annua*

Table 1: Hair length determination after the treatment

Treatment animal group	*Hair length (mm)*	*12 days*	*16 days*	*21 days*
Group 1	Control (Positive)	4.29 ± 0.76	6.15 ± 0.75	8.91 ± 0.33
Group 2	2% Minoxidil (Standard)	12.22 ± 0.05	16.18 ± 0.52	23.24 ± 0.82
Group 3	PET MASE+HASE (10 mg/mL)	7.78 ± 0.79	9.99 ± 0.76	12.35 ± 0.56
Group 4	PET MASE+HASE (20 mg/mL)	9.99 ± 0.45	13.98 ± 0.77	16.72 ± 0.82
Group 5	PET MASE+HASE (30 mg/mL)	12.99 ± 0.86	16.74 ± 0.99	21.35 ± 0.25

Hair length was determined from the treatment course's 12, 16 and 21 days. The result was shown as the mean value S.D. p <0.05, when compared to respective control positive and standard values (number of hairs = 25).

Table 2: Hair weight observation after treatment of 21 days.

Treatment animal group		*Hair weight (mg)*
Group 1	Control (Positive)	0.22 ± 0.006
Group 2	2% Minoxidil (Standard)	0.75 ± 0.014 **
Group 3	PET MASE+HASE (10 mg/mL)	0.49 ± 0.006 **
Group 4	PET MASE+HASE (20 mg/mL)	0.58 ± 0.006 ***
Group 5	PET MASE+HASE (30 mg/mL)	0.65 ± 0.003 **

The output results have been shown as the mean ± S.D. $p < 0.01$, $p < 0.001$, compared to respective control positive and standard values (number of hair = 25).

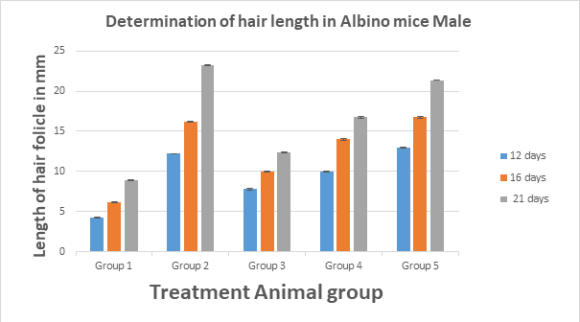

Fig. 2: Graph shows the length of hair growth according to the number of days in albino mice

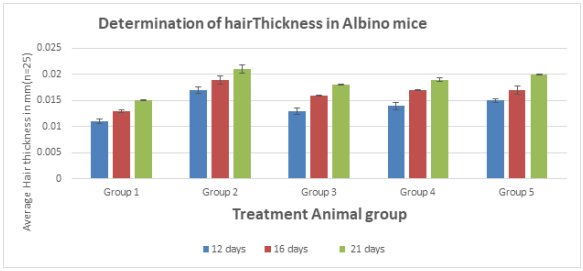

Fig. 3: Graph shows that the thickness of hair according to number of days in albino mice

seed oil extract treated group. The phase of hair cycle was accelerated to telogen to anagen, show an increase in the density of hair. This transition is responsible to grow hair and show growth potential of drugs. The result suggested that the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract are good for hair growth potential and produce telogen to anagen process fast in phase of the hair cycle (Fig. 2).[6, 22,23]

Hair Length Observation

The treated albino mice with dosages 10, 20 and 30 mg/mL of the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract have been shown a magnificent effect on hair growth as compared to standard drug (2% minoxidil), at 12, 16 and 21 days. The observed and recorded data show that the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract 30 mg/mL is more effective on albino mice. About 30 mg/mL of the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract the length of hair at 21 days in albino mice (21.35 ± 0.25 mm) was much longer than the control group shows (8.91 ± 0.33 mm) and standard group (2% minoxidil) with the values of (23.24 ± 0.82) mm, respectively described in (Table 1).[21, 24-26]

Determination of Weight

It also observed and recorded the weight of the hair after treatment animal of 21 days. The grown hair by albino mice with the treatment of petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract was the highest with values of (0.65 ± 0.03 mg) respectively. The petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract of 30 mg/mL had a magnificent effect in albino mice, as described in Table 2.

Hair Thickness Determination

At the end of 21th days treatment, hair is removed by the help of forceps after sterile from the treatment area of albino mice in each and every group i.e. control group (Positive), standard (Minoxidil 2% solution) and the treated groups. Thickness of hair was determined by the micrometer measuring instrument their smallest count was 0.01 mm. Their data analysis of various formulation the thickness of hair was recorded. The thickness of hair was determined by taking 25 hairs and recorded and observed in Table 3, and the same has also been expressed in terms of figures (Fig. 3). In group 5 have seen maximum

Table 3: Effect of oil extracts on hair thickness

S. No	*Treatment animal group*	*Average hair thickness in mm (n = 25)*		
		12 days	*16 days*	*21 days*
1.	Group 1	0.011 ± 0.004	0.013 ± 0.003	0.015 ± 0.001
2.	Group 2	0.017 ± 0.006	0.019 ± 0.008	0.021 ± 0.008
3.	Group 3	0.013 ± 0.006	0.016 ± 0.010	0.018 ± 0.010
4.	Group 4	0.014 ± 0.007	0.017 ± 0.010	0.019 ± 0.003
5.	Group 5	0.015 ± 0.004	0.017 ± 0.008	0.020 ± 0.010

The results were shown as the mean ± S.D. $p < 0.01$, $p < 0.001$, when compared to respective control values by (n = 25).

hair growth as compared to standard group and control group (Positive) treated animals. The data obtained from group 5 shows after 21 days 0.020 ± 0.0010 mm, which were comparable to positive control (Minoxidil 2% solution) having 0.015 ± 0.001, 0.021 ± 0.008 mm. The result also shows good condition of hair quality and strength of hair and falling ratio also seen least on albino mice. In our study commonly seen and assumed that the transformation of telogen to anagen phase hair follicle change in at period of time. The aggregated dermal papilla cell is secondary germs which is force to telogen follicle to proliferate their growth continuously to new anagen follicle construction.

The petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract has proven to be an excellent property of medication for hair growth potential. Most of the time, the selected plants extract-derived medication were associated with fewer side effects on the body. Linoleic acid, flavonoids, and glycosides have hair growth potential, as shown in the present research work. The petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract has proven to be excellent for hair growth potential, when evaluated *in-vivo* on an albino mice model.

After 21 days of topical application, the results were found that the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract have significant hair growth on 30 mg/mL 21.35 ± 0.25. The control group shows (8.91 ± 0.33) and the standard drug minoxidil shows (23.24 ± 0.82) excellent performance. As well as a visible increase of hair growth of length, the positive control group and the standard group, the treatment group treated of the petroleum ether combination of *H. annuus* seed oil extract and *M. annua* seed oil extract, the potential of hair thickness and weight was shown in 30 mg/mL (0.020 ± 0.010 mm) and (0.65 ± 0.03 mg), as compared to standard drug. Hair growth potential in albino mice of 30 mg/mL oil extracts combination of both plants given magnificence growth in albino mice.

Conclusion

During hair growth, the process of differentiation during migration, hair matrix cells to the surface of the scalp is induced by vigorous proliferation. The skin produces hair in ectoderm, especially if it is made up of protein like creatinine at a rate of 6 inches a year. The main curse of the mankind is alopecia or baldness of hair on the head, which belongs to a dermatological disorder that has been known for years back. In present study phytochemical screening of petroleum ether extract of *H. annuus* seed and *M. annua* seeds results the presence of terpenoids, linoleic acid, steroids and flavonoids. The results of present study were showed significant hair growth effect of petroleum ether extract of *H. annuus* seed and *M. annua* seeds in combination with different doses amount. The hair cycle was examined to determine and record whether the combination of both plant extracts has promoted hair growth during in vivo study. Hair growth effect was observed in dose dependent manner particularly in albino mice. The effect was comparable to the standard market formulation i.e. 2% minoxidil. These findings suggested that *H. annuus* seed extract and *M. annua* seed extract have the significant hair growth potential may be due to presence of linoleic acid and some steroids.

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