

Research Article

Traditional Uses of Medicinal Plants in Uttarakhand Himalayan Region

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Abstract: The Himalayas have a great wealth of medicinal plants and traditional medicinal knowledge. Medicinal plants have played an important role of primary health care system among the local people of Himalayan region. The present paper is a study of the traditional knowledge of medicinal plants and its use by local people of Uttarakhand Region. It is a hill state in the Indian Himalayan region. Due to its unique geographical location and different climatic condition, it has rich biodiversity and variety of plant species. Medicinal plants are the principal health care resources among the most of people in India. Local people of this region are basically depends upon medicinal plants for their primary health care system. Their primary cure of diseases is based upon deep observation of nature and their understanding of traditional knowledge of medical practices. Local people in this region, especially tribal people and women heavily use these traditionally available medicinal plants for health and believe that these are easily available, less expensive and have no side effects as compare to modern medicine. The plants used for medicinal purposes in the primary health traditions are slowly becoming extinct due to development activities, population explosion, impact of tourism, deforestation and many more. The present paper focuses about the indigenous knowledge of different medicinal plants used in the Uttarakhand Himalayan region. Ethnomedicinal uses of 111 medicinal plant species along with botanical name, part used and mode of treatment are given in this paper.

Keywords: Medicinal Plants, Traditional Knowledge, Deforestation, Ethnomedicinal.

INTRODUCTION

The Himalayas have a great wealth of medicinal plants and traditional medicinal knowledge. Medicinal plants have played an important role of primary health care system among the local people of Himalayan region. As the local people are settled far from urban area, they cannot take modern health care facilities so they are totally dependent on traditional medicinal practices for their primary health care. Out of 15,000 species of flowering plants found in India, about 17% have their medicinal value [1-2] several species (1,745) are from the Indian Himalayan region, and many of these are found in Uttarakhand [3-4]. Local people of this region are partially or completely dependent on forest resources for medicine, food, and fuel [5] and medicinal species are steadily diminishing due to anthropogenic activities [6]. The Central Himalayan Region covers the new state (Uttarakhand) of India, provides admirable opportunities for studying the Traditional Knowledge Systems. Uttarakhand has a rich variety of herbs, medicinal and aromatic plant species. The Garhwal Himalaya is one of the richest floristic zones of India and contains more than 300 species of medicinal plants[5]. The ancient documentation of 67 medicinal plants in Hindu culture is found in the “*Rigveda*,” which is thought to have been

written between 4,500 and 1,600 BC [7]. Collection and trade of medicinal plants to India is a historical fact.

The trade of non-timber jungle products is mentioned in the 3,000 years old *Ramayan* [8]. Similarly the *Urikshayarved* provides outstanding information about plants and their medicinal properties. The *Charak* and the *Sushrut Samhitas* were written between 700-200 BC, and contain accounts of the finding of medicinal plants [9]. India's natural forests are home to about 8000 medicinal plants that form the primary source of health care for 60-80% of the country's population, specially the rural people, tribal community and poor people. About 80% of traditional medicines used for principal healthcare are derived from plants(Fransworth). During the last few decades, there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the glob [10-12]. Documenting indigenous knowledge through ethnomedicinal studies is significant for the management and utilization of biological resources. The World Health Organization (WHO) suggested that as many as 80% of the worlds people depend on traditional medicine for their primary healthcare needs. There are significant economic benefits in the development of indigenous medicines and in the use of medicinal plants for the cure of various diseases [13].

GEOGRAPHY OF UTTARAKHAND

Uttaranchal (Uttarakhand) is 27th state of the republic of India. It was formed on November 9, 2000, which was carved out of Uttar Pradesh. It is a hilly state, having international borders with china (Tibet) in the north and Nepal in the east. On its north-west lies Himanchal Pradesh and while on the south is Uttar Pradesh. It occupies an area of 53,483sq km. This state lies between 28° 53' 24"-31° 27' 50" N and 77° 34' 27"-81° 02' 22" E. Of its total geographical area, about 47, 325 sq km is covered by mountains. There are Four major river systems viz. Ganga, Yamuna, Ramganga & Sharda originating from the state along with their tributaries which are major source of water for drinking, irrigation and hydropower. The major wealth of the state is its forests with very rich biodiversity. The state ranks sixth

among the other states in terms of percentage of recorded forest area According to Census of India, 2011, Uttarakhand has a total population of 101.17 Lakh with a decadal growth rate of 19.17 percent for the year 2001-11. Out of total population, 51 percent are males while 49 percent are females. The population density of the state is 189 persons per sq.km while the literacy rate is 79.6 percent which is higher than the national average of 74%.

METHODOLOGY

The data was collected through secondary sources mainly from the website of Government of Uttarakhand, State Medicine Plant Board of Uttarakhand and Forest department of Uttarakhand. References from research papers, books, articles and news paper were taken for interpretation of data.

MEDICINAL PLANTS AND ITS USES IN TRADITIONAL MEDICINAL PRACTICES

S. No	Botanical Name	Local Name	Parts Used	Uses	Mode of treatment
1	<i>Capsella bursa-pastoris</i> , Moench.	Torighash	Whole plant	For Sikka Rog	Two palmful whole plant decoction in water given two times for vigor
2	<i>Cardamine impatiens</i> , Linn.	-	Whole plant	For Tantrka in calf	One palmful whole plant decoction in one liter water given two times for vigor
3	<i>Viola biflora</i> , Linn.	Banpansa	Whole plant	In calf for heart & faint problem	Two palmful whole plant two times a day for attack. Three/four parts of two palmful whole plant & a spoon honey given two times for heart & skin problem
4	<i>Viola patrinii</i> , DC	-	Root	For liver	Two palmful root decoction in one liter water given two times for vigor
5	<i>V.serpens</i> , Wall.	-	Root	For Liver	Two palmful root decoction in one liter water given three times with honey
6	<i>Hypericum cernum</i> ,	Vaya, Culi	Whole plant	For Hoskins, For wound	Two palmful whole plant decoction in one liter water given two times for vigor
7	<i>Linum usitatissimum</i> , Linn.	Alsi	Whole plant	For strength	Two palmful whole plant decoction in 1 & 1/4 liter water given two times for strength
8	<i>Melilotus alba</i> , Lamk.	Banmethi	Whole plant	For stomach problem and Indigestion	One palmful whole plant given three times in a day for vigor
9	<i>Trifolium repens</i> , Linn.	Garila	Whole plant	For Satrika	Four palmful whole plant given two times a day
10	<i>Agrimonia pilosa</i> , Ledeb.	Kafliya	Whole plant	For purification of blood	Half palmful whole plant decoction in three/ four liter water given one fourth part with gur in morning
11	<i>Fragaria vesca</i> , Linn.	Pudalia Kafal	Leaf	To protect abortion	Two palmful leaves given daily
12	<i>Potentilla argyrophylla</i> ,	Danti, Brajdanti	Leaf/Root	For stomach problem	One palmful leaves/two matured root decoction in 3/4 liter water

					given thrice in a day.
13	<i>Rhamnus virgata</i> , Rox b.	Chaitula	Fruit	In Leg swelling	Five matured fruit decoction in ¼ liter water given daily
14	<i>Rosa moschata</i> , Herrm.	Kunj pani	Fruit	For leucorrhoea, bleeding, Pregnancy termination.	Two palmful fruit with one spoon honey given daily
15	<i>Rubus paniculatus</i> , Sm.	Kala Hisalu(Kadula)	Leaf	In pregnancy	Two palmful leaves decoction in ½ liter water given its one cup twice a day
16	<i>R. lasiocarpus</i> , Sm.	Kala Hisalu	Leaf	In pregnancy	Leaf is useful for cow specially in pregnancy pain
17	<i>Bergenia ciliata</i> , Moench.	Silphora	Root	For Hydrophobia	Two palmful root decoction in ½ liter water given its one cup thrice a day
18	<i>Ribes grossularia</i> , Linn.	Caktu	Whole plant	For preventing abortion	One palmful whole plant given daily
19	<i>Punica granatum</i> , Linn.	Darim	Skull of fruit	As antimicrobials	One palmful skull of fruit decoction in ½ liter water given its one cup three times a day with gur
20	<i>Woodfordia floribunda</i> , Salisb.	Dhow	Flower	As energy syrup	One palmful dry flower decoction in water is useful for animals
21	<i>Centella asiatica</i> , (Linn.)Urban	Brahmi	Leaf	For brain fever	Apply Paste of green leaves on forehead during fever
22	<i>Cuminum cyminum</i> , L.	Jeera	Seed	For indigestion	One palmful seed in ¼ liter water given daily
23	<i>Foeniculum vulgare</i> , Mill.	Saup	Seed	For Hookworm	One palmful seed in 1/8 liter water given before morning meal
24	<i>Pimpinella diversifolia</i> , Dc	Dhanjari	Seed	For Lactation	One palmful seed given daily
25	<i>Abina cordifolia</i> , Hook. F	Haldu	Bud& leaf	For Wound & fever	Applying paste of new bud on the wound. Decoction of leaves in ½ liter water given thrice a day in fever
26	<i>Valeriana hardwichii</i> , wall.	Samyo, Dhup	Root	For titaini	Four matured root decoction in two liter water given ¼ liter twice a day
27	<i>Aesculus indica</i> , Colebr.	Pangar	Fruit	In stomach problem	One palmful fruit decoction in ½ liter water given with gur
28	<i>Artemisia maritime</i> , Linn.	-	Bud/Leaf	For Indigestion	One palmful bud/leaves decoction in one liter water given one cup daily
29	<i>A. nilagirica</i> , Pampanini.	Patti, Kunj	Whole Plant	For urinary tract infection	One palmful whole body decoction in one liter water given one cup with gur
30	<i>Artemisia parviflora</i> , Roxb.	Patti, Dhopani	Leaf/ Bud	For round worm	One palmful leaves/ bud decoction in a liter water given 1/8 liter in one hour interval
31	<i>A. sacrorum</i> , Ladeb.	Kapar Patti, Jholpatti	Leaf/Bud	For hair fall	One palmful leaves & bud decoction in two liter water given one cup twice a daily

32	<i>Seneciochrysanthemoides</i> , DC.	Ratpatia	Whole plant	For skin disease	Two palmful whole plant decoction in 3/4 liter water given one cup daily
33	<i>S. rufinervis</i> , DC.	-	Seed	For wound	Three palmful seed given twice a daily
34	<i>G. pretense</i> , Linn.	Chalmori	Whole plant	In fever, urine problem, eye problem	Two palmful whole plant decoction in 3 / 4 liter water given one spoon thrice daily
35	<i>Tanacetum nubigenum</i> , Wall.	-	Leaf/ Fruit	As energy syrup, anti microbes.	One palmful leaves/ fruit decoction in one liter water given one spoon with honey
36	<i>Lobelia pyramidalis</i> , Wall.	Bran tambacoo	Whole Plant	For liver disease	Two palmful whole body decoction in 3 / 4 liter water given one spoon with honey thrice a daily
37	<i>Anagallis arvensis</i> , Linn.	Vish Khaparia	Fruit/Leaf	As pain killer	Two palmful fruit/ leaves given daily
38	<i>Primula denticulate</i> , Smith.	Vish Khaparia	Fruit	In cough, useful for mammary glands	Two palmful flower given with gur
39	<i>P. macrophylla</i> , D. Don.	-	Whole Plant	As painkiller	This plant works as painkiller
40	<i>Holarrhena antidysenterica</i> , Wall.	Quiar, Indraw	Seed & bark	In fever, Gastric & dysentery	One palmful powder of bark/ seed decoction in one liter water given one cup with gur
41	<i>Calotropis procera</i> , R. Br.	Ank	Root	In indigestion	One palmful powder of root decoction in one liter water given one cup twice a day
42	<i>Gentiana tenella</i> , (Roltb) H. Smith.	Kutuki, Katuwi	Fruit	In hysteria, In weakness	25g of bark of fruits decoction in one liter water given one cup with honey per day
43	<i>Swertia purpurascens</i> , Wall.	Ciraita	Whole Plant	In fever, In weak appetite.	Two palmful whole plant decoction in one liter water given one cup thrice a day
44	<i>Capsicum annum</i> , Linn	Khusane, Marac	Fruit	As oil massage.	One palmful fruit decoction in three liter water gives one cup twice a day
45	<i>Datura metal</i> , Linn.	Dhatura	Seed	As pain killer (for external use only)	25g roasted seed in one liter oil is used for massage
46	<i>Hyoscyamus niger</i> , Linn.	Bran juwan	Leaf & Seed	As pain killer	Paste of leaves and seed is used as ointment
47	<i>Digitalis purpurea</i> , Linn.	Prawasit Degitelis tilpushpi	Leaf	In burning	One palmful leaves is roast with oil is used as ointment
48	<i>Verbascum thapsus</i> , Linn.	Akalvir	Leaf	In bronchitis	One palmful leaves decoction in 3/4 liter water given one cup thrice a day
49	<i>Clerodendrum infortunatum</i> , Gaertn.	Aranyo	Bark	In Efra	Powdered bark decoction in 2 liter water given one cup thrice a day

50	<i>Ajuga parviflora</i> , Benth.	Ratpatia	Whole plant	In arthritis	One palmful whole plant decoction in 3/4 liter water given one cup daily
51	<i>Mentha arvensis</i> , Linn.	Pudina, Eliachi	Whole plant	In post pregnancy problems	Two palmful whole plant decoction in a liter water given 1/4 part thrice a day
52	<i>Ocimum sanctum</i> , Linn.	Tulsi	Whole plant	In fever	Two palmful whole plant twice a day
53	<i>Origanum vulgare</i> , Linn.	Jangali tulsi	Whole plant	Indigestion	Four palmful whole plant with fibrous food twice a day
54	<i>Salvia lanata</i> , Roxb.	Sania, Sunip	Whole plant	For vomiting, painkiller	Two palmful whole plant with gur and fibrous food thrice a day
55	<i>Scutellaria angulosa</i> , Benth.	Karuijhar	Whole plant	In acidity	One palmful whole plant decoction in 1/2 liter water given one spoon with honey thrice a day
56	<i>Thymus serpyllum</i> , Linn.	Van ajmain	Whole plant	In chest pain	One palmful whole plant decoction in 1/2 liter water given one cup twice a day
57	<i>Plantago major</i> , Linn.	Vrantank	Leaf	In Injury, teeth problem, fever	Paste of leaves in water useful for injury & teeth pain. Two bunch of leaves decoction in one liter water given 1/6 part thrice a day for fever
58	<i>P. orata</i> , Forsk.	Esabgol	Seed	In dysentery	One palmful seed in 1/2 liter water makes a semisolid paste given thrice a day
59	<i>Boerhaavia diffusa</i> , Linn.	Parnata	Leaf	In blood dysentery, In dropsy	Juice of leaves thrice a day
60	<i>Achyranthes aspera</i> , Linn.	Chirchira	Whole plant	For teeth problem	One palmful whole plant in 1/2 liter water is useful in teeth problem
61	<i>A. bidentata</i> , Blume.	Dansh	Root	As Laxative	One palmful root decoction in one liter water given two times for vigor
62	<i>Chenopodium album</i> , Linn.	Bethuwa	Leaf/seed	For worm	Two palmful seed is given before breakfast
63	<i>Rheum emodi</i> , Wall.	Dolu, Archa	Root	For blood purification, for energy	One matured root decoction in one liter water given three times for vigor
64	<i>Rumex hastatus</i> , D. Don	Bhilmora	Whole plant	For skin disease, In fever	One palmful whole plant decoction in 3 / 4 liter water given one cup thrice a day
65	<i>Piper longum</i> , L.	Pipal	fruit	In Low appetite, As oil massage	Powder of fruit is useful for low appetite. Oil with powder massage is useful
66	<i>Cinnamomum tamala</i> , Ness.	Kiriya, karkiriya, Dalchini	Leaf	In stomach problem, in gastric problem	Powder of Leaves and bark with half palmful fiber food is useful
67	<i>Litsaea polyantha</i> , Juss.	Cirira	Leaf	In injury	Powder of bark & leaves in cold water as ointment
68	<i>L. umbrosa</i> , Ness.	Circira	Leaf	In bone	Paste of leaves in water as

				injury	ointment in bone injury
69	<i>Viscum album</i> , Linn.	Bana	Fruit	In pregnancy problem	Six fruits with milk twice a day
70	<i>Emblicoefficialis</i> , Gaertn.	Aula, Awla	Fruit	In eye disease/ good health	Two palmful fruits powder with fibrous food
71	<i>Euphorbia prolifera</i> , Buch. Ham., ex. Don.	Duwila	Fruit	Used in dog bite	Powder of fruit is useful
72	<i>Mallotus philippinensis</i> , Muell. & Arg.	Roli, Kasela	Fruit	To protect from worm	Fruit extract with one palmful fibrous food is given once a day
73	<i>Ricinus communis</i> , Linn.	Erind	Leaf	For internal injury	Oil of this plant is useful. Use of leaves in heat therapy
74	<i>Betula utilis</i> , Don.	Bhuj, Bhojpatra	Seed	To protect from worm	Two small pinch is useful
75	<i>Quercus dilatata</i> , Lindl.	Banj	Bark	In dysentery	Two palmful powder of bark decoction in one liter water given one cup twice a day
76	<i>Q. semecarpifolia</i> , Sm.	-	Bark	In dysentery	Two palmful bark powder decoction in one cup water given twice a day
77	<i>Salix elegans</i> , Wall.	Garbainsh	Fruit	In rickets	Three palmful fruits decoction in one liter water given one cup thrice a day
78	<i>Ephedra gerardiana</i> , Wall.	Gidjing	Stem	In pain	One bunch of stem pieces decoction in 2 liter water given one cup in early morning
79	<i>Juniperus communis</i> , Linn.	Jhora, khichiya	Fruit	In liver disease	Twelve fruits daily
80	<i>Abies webbiana</i> , Lindl.	Raisal barmi radha	Bud	In Cough	One palmful bud decoction in 3 liter water given thrice a day
81	<i>Cassia absus</i> , Linn.	Banar, Chakwar	Seed	In urine problem	One palmful seeds decoction in ½ liter water given one cup thrice a day
82	<i>Satyrium nepalense</i> , D. Don.	-	Root	As tonic	Two palmful roots decoction in 3 / 4 liter water given ½ parts twice a day
83	<i>Zingiber officinalis</i>	Banhaldi	Root	Internal injury, As anti worm	Paste of root
84	<i>Cureuma angustifolia</i> , Roxb.	Banhaldi	Root	In gastric problem, anti worm	Paste of root
85	<i>Acorus calamus</i> , Linn.	Banj	Root	Fever, pain	Two matured root with fibrous food given daily
86	<i>Allium stracheyi</i> , Baker	Jambu	Whole Plant	For stomach problem	Two palmful whole plant given thrice a day
87	<i>Allium wallichii</i> , Kunth.	Jangali Lasun	Root	In infection	Two node given daily
88	<i>Asparagus racemosus</i> , Willd.	Kairuwa	Bud	In liver problem & To enhance Lactation	One palmful bud given twice a day
89	<i>Aloe vera</i> , Linn.	Patquar	Leaf	Stomach problem	Juice of leaves given ½ cup a day
90	<i>Adiantum venustum</i> , G	Hanshraj	Seed	For Chest	One palmful seed given with

	. Don.			problem and hair fall	fibrous food
91	<i>Equisetum arvense</i> , Linn.	Horsetel	Whole plant	For urinary problem	Half palmful whole plant decoction in one liter water given
92	<i>Althaea officinalis</i> , Linn.	Jangalihauli	Root	For termination of pregnancy	Three/ four matured root decoction in one liter water is given
93	<i>Reinwardtia trigyna</i> , Planch.	Pyuli	Root	In wound	One bunch of root decoction in ½ liter water given one cup in a gap of two days
94	<i>Tagetes erecta</i> , Linn.	Hazari	Fruit	In vomiting, In healing wound	One palmful fruit is given with fibrous food at the time of vomiting. Its external use is in filling wound
95	<i>Calendula officinalis</i> , Linn.	Ganda(Tokar)	Leaf	In bleeding	Juice of leaves is helping in bleeding
96	<i>Atropa belladonna</i> , Linn.	Dhatur Jahar	Leaf	In injury as pain killer	Paste of one palmful leaves burns in oil acts as ointment
97	<i>Datura stramonium</i> , Linn.	Dhatura	Leaf	In injury as pain killer	Paste of one palmful leaves acts as ointment
98	<i>Urtica dioica</i> , Linn.	Sisauna	Leaf	Skin disease, For lactation	One palmful leaves is given with fibrous food in 1h interval
99	<i>Juglans regia</i> , Linn.	Akhore	Leaf/ fruit	In stomach problem, As anti worm	Two palmful leaves or two green fruits decoction in 1 liter water is given one cup with two spoon honey thrice a day
100	<i>Hedychium spicatum</i> , Ham.ex. Smith	Kapur Kachari	Root	For fever & cough	Root is given with gur
101	<i>Canna indica</i> , Linn.	Kewara	Root	In disinterest, In afra	Powder of one bunch of root is given with gur
102	<i>Anemona obtusiloba</i> Don.	Kakaria	Leaf	In sinus	A cotton bud is made of Paste of leaves with Ghee for cleaning sinus
103	<i>Delphinium denudatum</i> , Wall	Nirwishi, Munel	Seed	In tics	One palmful seed decoction in ½ liter water is given
104	<i>Aconitum balfouria</i> , stapf.	Bishjahaar	Root	In wound	One matured root burns in one liter oil gives a ointment
105	<i>Paeonia emodi</i> , Wall.	Bhoi Pawin	Root	In stomach problem	One matured root decoction in 3 / 4 liter water is given one cup with 100g gur thrice a day
106	<i>Berberis aristata</i> , DC	Kilmori	Root & stem	In fever, weakness	One palmful root/ stem decoction in ½ liter water given one cup daily
107	<i>Fumaria parviflora</i> , Lamk.	Pitpapara	Whole plant	In skin etching(disease)	One palmful whole plant decoction in one liter is given
108	<i>Brassica napus</i> , Linn.	Kali sarso	Seed	In poor appetite	Two palmful seed is given with fibrous food and gur twice a day
109	<i>Geranium ocellatum</i> , Camb.	Bhiljari	Whole plant	As insecticide	Four whole plant with fibrous food twice a day. Powder of whole plant is given as insecticide

110	<i>Acacia catechu</i> , Wild.	Khair	Stem	In Urine problem, dysentery	One palmful stem decoction in ½ liter water given one cup four times a day
111	<i>Butea frondosa</i> , Koen.	Dhank	Flower, Seed	As painkiller	Paste of flower and seed is given

Medicinal plants have strong acceptance in spiritual activities of north Indian inhabitant communities, who worshiped the plants in the form of god, goddesses, and minor deities [14]. Due to the unavailability of modern health facilities, poverty, connectivity with urban centre, awareness, etc. people in rural areas are still relying on traditional medicines for their health care. Many communities use wild plant parts for the primary healthcare, due to belief in its effectiveness, easily available, lack of modern medicines. Apart from human use, many plant species were also used in animal husbandary as the primary source of healthcare [15-16]. United nations University proposal defines traditional knowledge system as “traditional knowledge or ‘local knowledge’ is a record of human achievement in comprehending the complexities of life and survival in often unfriendly environments. Traditional knowledge may be technical, social, organizational, or cultural was obtained as part of the great human experiment of survival and development.” Traditional knowledge provides the basis for problem-solving strategies for local communities, especially the poor. Diseases are the curse of civilization ever since its advent on this planet. Humans have been struggle against a variety of diseases since ancient periods. Finally humans developed a native system of medicine. For millennia human societies have been depending on forest and forest products like medicinal plants, aromatic plants, edible roots, food and many other things for their livelihoods as well as primary health needs. In certain areas these folk medical prescriptions are widespread and have survived through ages from one generation to the next generation through the word of mouth. They do not exist as on paper knowledge. Normally these systems of medicine depend on old people's experiences and practices.

CONCLUSION

The Uttarakhand Himalayan people have a close relationship with nature. They are fully dependent upon forest for food, fruits, fodder, and medicinal plants for their healthcare. Local people in this region, especially older age people, tribal people and women heavily use these traditionally available medicinal plants for health and believe that these are easily available, less expensive and have no side effects as compare to modern medicine. The present situation of traditional knowledge regarding to medicinal plants everywhere is an issue of deep anxiety as the traditional knowledge is gradually declining and disappearing from the countryside. Due to the deforestation, impact of tourism on natural vegetation of this region, population explosion & heavily construction of this region for development and changing of climate in Himalayan region and many more to responsible for its.

We have to make proper policies and do implement these to conserve the forests and medicinal plants . Farmers and local people should be involved in the cultivation of medicinal plants at least on their barren and fallow land.

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