

# Ethnoveterinary Practices of Arki and Kandaghat Tehsils of District Solan, Himachal Pradesh (India)

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**Abstract:** *The subject of ethnobotany has been recognised as a rapidly expanding multidisciplinary natural science with practical application of its data mainly in biodiversity prospecting and conservation biology. Herbal medicines play an important role in animal healthcare. Himalaya has influenced the life and culture of communities in a wider context. The state of Himachal Pradesh including 16, 997 villages with 55, 673 square meter area under 12 districts, is a reservoir of medicinal and aromatic plants. Now - a - days, the subject of ethnobotany has been recognised as a rapidly expanding multidisciplinary natural science with practical application of its data mainly in biodiversity prospecting and conservation biology. Arki and Kandaghat tehsils of district Solan are rich in biodiversity and culture but are still unexplored. The rural populace of study area is still dependent on the medicinal plants for the healthcare of their livestock. Rural inhabitants of the region are conscious for the health of their livestock as evident from the usage of as many as 93 plant species belonging to 88 genera under 47 families. Mostly, the leaves of the plant species (35%), followed by whole plant (22%), seeds (11%) and stem/bark/twigs (10%) are used to cure different ailments of livestock.*

**Keywords:** Ethnobotany, Biodiversity, Healthcare, Livestock, Ailments

## 1. Introduction

The term ethnobotany was coined by J. W. Harshberger in 1895 to “the study of plants used by primitive and aboriginal people”. Since then, it is interpreted by different researchers as a discipline with multidisciplinary approach (Robbins *et al.*, 1916; Schultes & Reis, 1995). Maheshwari (1983), described it as a relationship between tribals/aborigines and plants. In wider context, it involves the reciprocal and dynamic aspect of the interaction of local communities with plants to unveil valuable information on unexplored natural resources and new uses of existing resources (Schultes, 1960). Now - a - days, the subject of ethnobotany has been recognised as a rapidly expanding multidisciplinary natural science with practical application of its data mainly in biodiversity prospecting and conservation biology (Ravishankar, 1996). Herbal medicines play an important role in animal healthcare too.

Himalaya has influenced the life and culture of communities in a wider context. The state of Himachal Pradesh including 16, 997 villages with 55, 673 square meter area under 12 districts, is a reservoir of medicinal and aromatic plants and ranges between latitude 30° - 22' - 40" and 33° - 12' - 40"N and longitude 75° - 45' - 55" and 79° - 04' - 20"E with altitudes ranging from 350 - 6, 975m. Different tribes such as Gaddies, Gujjars, Kinnauras, Jads, Lahoulis, Pangwalas and Swangalas of this region follow various traditional practices of resource utilization and conservation. The present study was undertaken in Arki and Kandaghat tehsils of district Solan. Solan district was carved out of Solan and Arki tehsils of Mahasu district and Kandaghat and Nalagarh tehsils of Shimla District. Tehsil Arki of district Solan is located at 31°15'N & 76.97'E and tehsil Kandaghat is located at 30°44'to 31°22'N and 76°36'to 77°15'E latitudes.

## 2. Literature Survey

Credit for pioneered ethnobotanical research had been that of Janaki Ammal (1955) who studied subsistence on food plants of certain tribals of South India particularly to explore better prospects of Dioscoreas. Since then uses of plants by the tribals are being recorded for a variety of purposes (Jain, 1981, 1989). *Glimpses of Indian Ethnobotany* by Jain (1981) is the first book dealing with Indian ethnobotany. Subsequently, the subject matter reviewed in some of the important compilations like ‘Bibliography of Ethnobotany’ (Jain *et al.*, 1984). Solan district of Himachal Pradesh has been explored by Verma & Chauhan, 2006: Ethno - medico - botany of Kunihar forest division; Verma & Chauhan, 2007: Indigenous medicinal plants knowledge of Kunihar forest division. Some of the important studies on ethnoveterinary plants of state are Rawat & Kharwal, 2012: Plants used as galactagogue (veterinary) by “Gujjars” of Shivalik foot hills, Himachal Pradesh, Singh & Kumar, 2000: Observations in ethnoveterinary medicine among the Gaddie tribe of Kangra valley, Himachal Pradesh, Sharma *et al.*, 2014. Ethnoveterinary practices in Jwalamukhi, Himachal Pradesh.

## 3. Methods/Approach

To collect the first hand information on ethnoveterinary practices, Intensive ethnobotanical surveys were conducted during the period of 2018 - 2022 in Arki and Kadaghat tehsils of district Solan. Structured questionnaire were used to document data about the traditional uses of plants from local healers and knowledgeable people. The resultant information of medicinal plants related to animal healthcare was recorded following Phondani *et al.*, 2010. Standard herbarium methodology of Jain and Rao (1977) was followed and the voucher specimens were authenticated at Himalayan Forest Research Institute, Shimla under ICFRE.

#### 4. Results/Discussion

The detailed information related to ethnoveterinary practices of the study area has been enlisted in Table 1.

**Table 1:** Plants Used for Various Ailments (Ethnoveterinary) in Arki and Kandaghat Tehsils of District Solan

S. No.	Botanical Names	Ailments	Part Used	Local Name	Family
1.	<i>Acacia catechu</i> * (L. f.) Willd.	Lactation	Pods	Khair, Kher	Fabaceae
2.	<i>Achyranthes aspera</i> L.	Snake bite	Leaves	Puthhkanda	Amaranthaceae
3.	<i>Aesculus indica</i> (Wall. ex Cambess.) Hook.	Indigestion, Colic	Seeds	Bankhod Khnor	Sapindaceae
4.	<i>Agave americana</i> L.	Fractured bone	Mucilage, Leaves	Rambaan	Agavaceae
5.	<i>Alangium chinense</i> * (Lour.) Harms.	Fractures bone	Bark	Onkalee	Alangiaceae
6.	<i>Albizia chinensis</i> (Osbeck) Merr.	Lactation	Twigs	Chui	Fabaceae
7.	<i>Amaranthus spinosus</i> L.	Blood Dysntery	Leaves	Kanda Cholai	Amaranthaceae
8.	<i>Amorphophallus paeonifolius</i> (Dennst.) Nicolson	Dysentery	Tuber	Zimikand	Araceae
9.	<i>Anemone vitifolia</i> *Buch. - Ham. ex DC	Wounds	Root	Anguri	Ranunculaceae
10.	<i>Argemone mexicana</i> *L.	Placental evagination	Root	Kandari	Papaveraceae
11.	<i>Arisaema tortuosum</i> * (Wall.) Schott	Wounds	Tuber	Jhangash	Araceae
12.	<i>Asparagus racemosus</i> *Willd.	Lactation	Whole Plant	Kaliyunti, Satavari	Asteraceae
13.	<i>Avena sativa</i> L.	Lactation	Seeds	Javi	Poaceae
14.	<i>Baccharoides anthelmintica</i> * (L.) Moench	Bloating, dysentery, lack of appetite, Abdominal crumping	Seeds	Kaljiri	Asteraceae
15.	<i>Bauhinia vahlii</i> *Wight & Arn.	Warts	Leaf	Tonri	Fabaceae
16.	<i>Bauhinia variegata</i> L.	Wounds	Bark	Karyal, Kachnar	Fabaceae
17.	<i>Boerhavia diffusa</i> L.	Wounds	Whole Plant		Nyctaginaceae
18.	<i>Bombax ceiba</i> * L.	Facilitate delivery, Stomach disorders	Leaves, Flowers	Shimal	Bombacaceae
19.	<i>Brassica campestris</i> L.	Lactation, lice, Ticks and bugs killing, Coolant	Seeds cakes, oil	Sarso	Brassicaceae
20.	<i>Cannabis sativa</i> L.	Wounds, Swellings	Leaves	Bhang	Cannabinaceae
21.	<i>Cardamine flexuosa</i> *With.	Conception	Whole Plant	Kulthi	Brassicaceae
22.	<i>Cassia fistula</i> *L.	Purgative Dysentery Laxative	Bark Fruit/ Pod Seeds	Amaltas	Fabaceae
23.	<i>Celastrus paniculatus</i> * Willd	Body strength	Seeds	Malkoni	Celastraceae
24.	<i>Chenopodium ambrosioides</i> *L.	Anthelmintic, Mastitis, Wounds	Leaves	Khatua	Chenopodiaceae
25.	<i>Cirsium wallichii</i> *DC.	Conception, Expulsion of Placenta	Root	Chilli	Asteraceae
26.	<i>Cissampelos pareira</i> *L.	Lactation, Diarrhoea, Blood Dysentery, Bloating	Whole Plant, root	Putandu	Menispermaceae
27.	<i>Citrus limon</i> * (L.) Burm. f.	Expel exoparasites	Fruit	Nimbu	Rutaceae
28.	<i>Cleome viscosa</i> *L.	Lactation, Wounds	Leaves, seeds	Harhar	Capparidaceae
29.	<i>Colebrookia oppositifolia</i> Sm.	Wounds	Leaves	Banbheda	Lamiaceae
30.	<i>Crotalaria juncea</i> *L.	Conception Coolant	Whole Plant	Shunshunu	Fabaceae
31.	<i>Curcuma longa</i> L.	Indigestion, Dysentery	Rhizome	Haldi	Zingiberaceae
32.	<i>Cynodon dactylon</i> (L.) Pers.	Wounds	Whole Plant	Doob, Joob	Poaceae
33.	<i>Dendrocalamus hamiltonii</i> *Nees & Arn. ex Munro	Expulsion of placenta	Leaves	Baans	Poaceae
34.	<i>Eclipta prostrata</i> (L.) L.	Wounds	Leaves and Root	Bhringraj	Asteraceae
35.	<i>Eleusine indica</i> * (L.) Gaertn.	Lactation	Whole Plant	Khurkhudi	Poaceae
36.	<i>Equisetum arvense</i> *L.	Lactation, cough, Blood Dysentery	Whole Plant	Khanspti	Equisetaceae
37.	<i>Eruca vesicaria</i> Sol. ex Salisb.	Body Strength, Lactation	Seeds	Taramira	Brassicaceae
38.	<i>Euphorbia hirta</i> *L.	Mastitis, Lactation	Whole Plant	Dudhli	Euphorbiaceae
39.	<i>Ficus auriculata</i> * Lour.	Lactation	Leaves	Tyambal	Moraceae
40.	<i>Ficus religiosa</i> L.	Lactation	Leaves	Peepal	Moraceae
41.	<i>Ficus virens</i> *Aiton	Wounds	Latex	Pilakkan	Moraceae
42.	<i>Galinsoga parviflora</i> Cav.	Lactation	Whole Plant	Piplu	Asteraceae
43.	<i>Geranium ocellatum</i> *Jacq. ex Cambess.	Conception	Whole Plant	Kaphli	Geraniaceae
44.	<i>Gloriosa superba</i> *L.	'Bashaon' (Joint pain), Snake bite	Root	Vishbuti	Colchicaceae
45.	<i>Grewia oppositifolia</i> Roxb. ex DC.	Lactation	Leaves	Biyul	Tiliaceae
46.	<i>Hedychium spicatum</i> Sm.	Expel dead foetus	Rhizome	Sheduri	Zingiberaceae

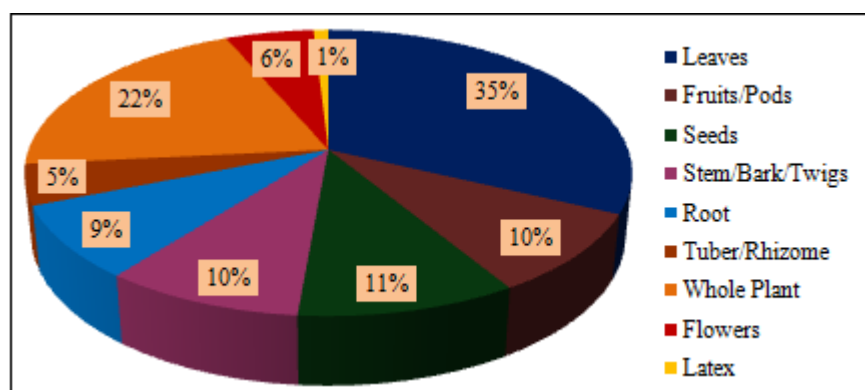
47.	<i>Helinus lanceolatus</i> *Brandis	Lactation, Loss of appetite, Bloating and dysentery	Whole Plant	Haldur	Rhamnaceae
48.	<i>Hesperethusa crenulata</i> * (Roxb.) M. Roem	Mouth Sores	Seeds	Banvil	Rutaceae
49.	<i>Hordeum vulgare</i> L.	Body Strength, Lactation	Seed Grain	Jo, Jau	Poaceae
50.	<i>Jasminum dispernum</i> * Wall.	Lactation	Vines	Shrari	Oleaceae
51.	<i>Jasminum grandiflorum</i> *L.	Wounds	Flowers and Leaves	Chameli, Sunni	Oleaceae
52.	<i>Jasminum multiflorum</i> * (Burm. f.) Andr.	Lactation	Twigs	Malti	Oleaceae
53.	<i>Malva sylvestris</i> L.	Mastitis	Flowers and Leaves	Kubje	Malvaceae
54.	<i>Mangifera indica</i> L.	Anthelmintic	Seeds	Aam, Amb	Anacardiaceae
55.	<i>Mentha spicata</i> * L.	Expel exoparasites	Leaves	Pudina	Lamiaceae
56.	<i>Melia azedarach</i> *L.	Killing lice, ticks and bugs, and dog bite	Leaves	Bakain	Meliaceae
57.	<i>Mimosa rubicaulis</i> *Lam.	Lactation	Shoots and Pods	Kandriyali	Fabaceae
58.	<i>Murraya koenigii</i> (L.) Spreng.	Wounds Diarrhoea and Dysentery Bloating Killing lice, bugs	Leaves Fruit and Bark	Gandhela	Rutaceae
59.	<i>Musa paradisiaca</i> *L.	Conception	Stem and leaves	Kela	Musaceae
60.	<i>Nasturtium officinale</i> *W. T. Aiton	Lactation	Whole Plant	Chhuchh	Brassicaceae
61.	<i>Nerium oleander</i> L.	Wounds	Stem and Leaves	Kaner	Apocynaceae
62.	<i>Nicotiana tabacum</i> L.	Kill lice, ticks and bugs	Whole Plant	Ban Tambaku	Solanaceae
63.	<i>Oenothera rosea</i> *W. Aiton	Lactation, Conception	Whole Plant	Chhoti Gulal	Onagraceae
64.	<i>Oxalis corniculata</i> L.	Diarrhoea and dysentery	Whole Plant	Amrul	Oxalidaceae
65.	<i>Persicaria capitata</i> * (Buch. - Ham. ex D. Don) H. Gross	Mastitis	Whole Plant	Chhitnu	Polygonaceae
66.	<i>Phoenix sylvestris</i> (L.) Roxb.	Lactation	Leaves	Khajri, Khajuri	Arecaceae
67.	<i>Phyllanthus fraternus</i> *Webst.	Mastitis	Fruit and Leaves	Bhuiamla	Euphorbiaceae
68.	<i>Plantago major</i> L.	Wounds	Leaves	Luru - gha	Plantaginaceae
69.	<i>Plumbago zeylanica</i> *L.	Mastitis	Root	Chicha	Plumbaginaceae
70.	<i>Pogostemon benghalensis</i> * (Burm. f.) Kuntze	Wounds	Whole Plant	Bantulsi	Lamiaceae
71.	<i>Polygonum aviculare</i> *L.	Mastitis	Leaves	Surigha	Polygonaceae
72.	<i>Prunus cerasoides</i> Buch. - Ham. ex D. Don	Fractured Bones	Bark	Paja	Rosaceae
73.	<i>Psidium guajava</i> *L.	Dysentery, Cough	Leaves	Amrood	Myrtaceae
74.	<i>Ranunculus repens</i> *Royle	Mastitis	Flowers and Leaves	Phuljhaddi	Ranunculaceae
75.	<i>Reinwardtia indica</i> *Dumort.	Dysentery	Leaves and Stem	Phulnu	Linaceae
76.	<i>Roylea cinerea</i> * (D. Don) Baillon	Insecticide (Ticks, lice and bugs killing)	Leaves	Kadwi	Lamiaceae
77.	<i>Sapindus mukorossi</i> *Gaertn.	Foot sores	Fruit	Reetha	Sapindaceae
78.	<i>Sida cordifolia</i> *L.	Mastitis	Root	Bala	Malvaceae
79.	<i>Sigesbeckia orientalis</i> L.	Wounds	Whole Plant	Chipkugha	Asteraceae
80.	<i>Smilax aspera</i> *L.	Mastitis	Leaves	Kukadd - daddi	Smilacaceae
81.	<i>Solidago virgaurea</i> *L.	Warts Wounds	Flowers and Leaves	Charmbuti	Asteraceae
82.	<i>Soyimida febrifuga</i>	Bone fracture	Bark	Rehyan	Meliaceae
83.	<i>Stephania glabra</i> * (Roxb.) Miers	Blood Dysentery, Bloating	Tubers	Kachaal Bel	Menispermaceae
84.	<i>Swertia angustifolia</i> Buch - Ham ex D. Don	Wounds	Leaves	Jhingi	Gentianaceae
85.	<i>Tagetes minuta</i> L.	Wounds	Flowers	Phulnu	Asteraceae
86.	<i>Terminalia bellirica</i> (Gaertner) Roxb.	Indigestion, Dysentery, Bloating	Fruit rind	Behera	Combretaceae
87.	<i>Tinospora cordifolia</i> * (Willd.) Miers.	Bloating, Fever, Dysentery	Stem	Giloy, Gulje	Menispermaceae
88.	<i>Tridax procumbens</i> *L.	Wounds	Whole Plant	Ghavpachddi	Asteraceae
89.	<i>Urena lobata</i> *L.	Mastitis	Fruit and Root	Chichdi, Banbhindi	Malvaceae
90.	<i>Vicia sativa</i> *L.	Lactation	Whole Plant	Matru	Fabaceae
91.	<i>Vitex negundo</i> L.	Fractured Bones, Joint pain	Leaves	Banna	Lamiaceae
92.	<i>Xanthium strumarium</i> *L.	Mouth and Foot sores	Fruit	Gokhru	Asteraceae
93.	<i>Zanthoxylum armatum</i> *DC.	Mouth sores	Fruits	Timri	Rutaceae

Rural inhabitants of the region are conscious for the health of their livestock as evident from the usage of as many as 93 plant species belonging to 88 genera under 47 families (Table 1). The predominant ailments (vet.) and plants used

for their cure prevailing in the region are: Lactation 24 species (*Acacia catechu*, *Albizia chinensis*, *Asparagus racemosus*, *Avena sativa*, *Brassica campestris*, *Cissampelos pareira*, *Cleome viscosa*, *Eleusine indica*, *Equisetum*

arvense, *Eruca vesicaria*, *Euphorbia hirta*, *Ficus auriculata*, *Ficus religiosa*, *Galinsoga parviflora*, *Grewia oppositifolia*, *Helinus lanceolatus*, *Hordeum vulgare*, *Jasminum dispersum*, *Jasminum multiflorum*, *Mimosa rubicaulis*, *Nasturtium officinale*, *Oenothera rosea*, *Phoenix sylvestris* and *Vicia sativa*), wounds 21 species (*Anemone vitifolia*, *Arisaema tortuosum*, *Bauhinia variegata*, *Boerhavia diffusa*, *Cannabis sativa*, *Chenopodium ambrosioides*, *Cleome viscosa*, *Colebrookia oppositifolia*, *Cynodon dactylon*, *Eclipta prostrata*, *Ficus virens*, *Jasminum grandiflorum*, *Murraya koenigii*, *Nerium oleander*, *Plantago major*, *Pogostemon benghalensis*, *Sigesbeckia orientalis*, *Solidago virgaurea*, *Swertia angustifolia*, *Tagetes minuta* and *Tridax procumbens*); Stomach disorders (Indigestion / dysentery / bloating / constipation / loss of appetite / diarrhoea / colic / abdominal cramping) 17 species (*Aesculus indica*, *Amaranthus spinosus*, *Amorphophallus paeoniifolius*, *Baccharoides anthelmintica*, *Bombax ceiba*, *Cassia fistula*, *Cissampelos pareira*, *Curcuma longa*, *Equisetum arvense*, *Helinus lanceolatus*, *Murraya koenigii*, *Oxalis corniculata*, *Psidium guajava*, *Reinwardtia indica*, *Stephania glabra*, *Terminalia bellirica* and *Tinospora cordifolia*), Mastitis 11 species (*Chenopodium ambrosioides*, *Euphorbia hirta*, *Malva sylvestris*, *Persicaria capitata*, *Phyllanthus fraternus*, *Plumbago zeylanica*, *Polygonum aviculare*, *Ranunculus repens*, *Sida cordifolia*, *Smilax aspera* and *Urena lobata*), lice, ticks and bugs killing 5 species (*Brassica campestris*, *Melia azedarach*, *Murraya koenigii*, *Nicotiana tabacum*, *Roylea cinerea*), for conception 5 species (*Cardamine flexuosa*, *Cirsium wallichii*, *Crotalaria juncea*, *Musa paradisiaca* and *Oenothera rosea*), mouth and foot sores 4 species (*Hesperethusa crenulata*, *Senna occidentalis*, *Xanthium strumarium* and *Zanthoxylum armatum*), fractured bones 5 species (*Agave Americana*, *Alangium chinense*, *Prunus cerasoides*, *Soymida febrifuga* and *Vitex negundo*), bites 3 species (*Achyranthes aspera*, *Gloriosa superba* and *Melia azedarach*), body strength 3 species (*Celastrus paniculatus*, *Eruca vesicaria* and *Hordeum vulgare*), joint

pain 3 species (*Gloriosa superba*, *Gloriosa superba* and *Vitex negundo*), anthelmintic 2 species (*Chenopodium ambrosioides* and *Mangifera indica*), for exoparasite 2 species (*Citrus limon* and *Mentha spicata*), warts 2 species (*Bauhinia vahlii* and *Solidago virgaurea*), for expulsion of placenta 2 species (*Dendrocalamus hamiltonii* and *Cirsium wallichii*), coolant 2 species (*Brassica campestris* and *Crotalaria juncea*), placental evagination 1 species (*Argemone mexicana*), to facilitate delivery 1 species (*Bombax ceiba*), fever 1 species (*Tinospora cordifolia*), one species (*Cannabis sativa*) for swelling, one species (*Cassia fistula*) as laxative and purgative and one species (*Anagallis arvensis*) to expel out leeches. Predominant families for this purpose are Fabaceae (9 species) followed by Asteraceae (9 species), Lamiaceae (5 species), Brassicaceae (4 species), Poaceae (4 species), Malvaceae (3 species), Menispermaceae (3 species), Moraceae (3 species), Oleaceae (3 species), Rutaceae (3 species), Sapindaceae (2 species), Amaranthaceae (2 species), Araceae (2 species), Ranunculaceae (2 species), Zingiberaceae (2 species), Euphorbiaceae (2 species), Polygonaceae (2 species) and the remaining 29 families are represented by one species each. In order of preference, the commonly used plant parts are: leaves (35%), whole plant (22%), seeds (11%), fruits/pods (10%), stem/bark/twigs (10%), root (9%), tuber/rhizome (5%) and latex (1%) etc. (Fig.1). Furthermore, a botanical analysis of ethnoveterinary recipes in India (Jain, 2003) pointed out that 10 predominant genera of veterinary medicine in order of number of species are *Euphorbia*, *Ficus*, *Acacia*, *Cassia*, *Polygonum*, *Solanum*, *Arisaema*, *Crotalaria*, *Curcuma* and *Prunus*. Contrarily, these for the present study are viz., *Ficus* (3 species), *Jasminum* (3 species), *Bauhinia* (2 species) etc. Another unique feature of the present study is that usages of as many as 59 plants (marked with asterisk in Table 1) are new to the science of ethnoveterinary medicine and holds a great potential for drug discovery programme through clinical validation.



**Figure 1:** Relative Percentage of Plant Parts Used for Treating Veterinary Ailments in Study Areas

Mostly, the leaves of the plant species (35%), followed by whole plant (22%), seeds (11%) and stem/bark/twigs (10%) are used to cure different ailments of livestock (Fig.1).

## 5. Conclusions

It is evident from the above account that the local populace of study area possesses great traditional knowledge for the healthcare of their livestock. However, this traditional

knowledge passed from one generation to another generation is deteriorating at a fast rate due to modern life style. Thus, there is an urgent need for the documentation of this valuable information to avail their maximum benefits and for the well - being of future generation.

## 6. Future Scope

The present study holds a great potential for drug discovery programme (veterinary) through clinical validation.

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### Author Profile



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