



GLOBAL JOURNAL OF MEDICAL RESEARCH
PHARMA, DRUG DISCOVERY, TOXICOLOGY AND MEDICINE
Volume 13 Issue 7 Version 1.0 Year 2013
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4618 & Print ISSN : 0975-5888

Unani Description of Sumaq (*Rhus Coriaria Linn.*) and its Scientific Report

By Haqeeq Ahmad, Faiyaz Ahmad, Izharul Hasan & Shabbir Ahmad

NIUM, India

Abstract- Plants have played a vital role in the prevention and treatment of diseases since prehistoric times. WHO estimates that 65%-80% of the world's population use traditional medicines, as their primary form of health care and most of the diseases have been treated by administration of plant or plant products. Sumaq (*Rhus coriaria Linn.*) is most useful herbal medicinal plant in India its post of fruits possess medicinal property. During the last few years the phytochemistry of the Sumaq is been achieved regarding the biological activity and its medicinal applications. It is now considered as a natural product for development of medicines against various diseases and also for the development of industrial products. This review gives a keen view mainly on the biological activities of the Sumaq and some of their compounds isolated, pharmacological actions of the Sumaq extracts and plausible medicinal applications of Sumaq along with their safety evaluation.

Keywords: *rhus coriaria, sumaq, unani medicine.*

GJMR-B Classification : NLMC Code: WB 55



Strictly as per the compliance and regulations of:



© 2013. Haqeeq Ahmad, Faiyaz Ahmad, Izharul Hasan & Shabbir Ahmad. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License <http://creativecommons.org/licenses/by-nc/3.0/>), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Unani Description of Sumaq (*Rhus Coriaria* Linn.) and its Scientific Report

Haqeeq Ahmad ^α, Faiyaz Ahmad ^σ, Izharul Hasan ^ρ & Shabbir Ahmad ^ω

Abstract- Plants have played a vital role in the prevention and treatment of diseases since prehistoric times. WHO estimates that 65%-80% of the world's population use traditional medicines, as their primary form of health care and most of the diseases have been treated by administration of plant or plant products. Sumaq (*Rhus coriaria* Linn.) is most useful herbal medicinal plant in India its post of fruits possess medicinal property. During the last few years the phytochemistry of the Sumaq is been achieved regarding the biological activity and its medicinal applications. It is now considered as a natural product for development of medicines against various diseases and also for the development of industrial products. This review gives a keen view mainly on the biological activities of the Sumaq and some of their compounds isolated, pharmacological actions of the Sumaq extracts and plausible medicinal applications of Sumaq along with their safety evaluation.

Keywords: *rhus coriaria*, sumaq, unani medicine.

I. INTRODUCTION AND HISTORY

Rhus coriaria Linn. is commonly known as Sumaq and the leaves have long been well known in Europe and in the East.. It belongs to the family Anacardiaceae¹. Theophrastus and Dioscorides described it as the fruit of plant used for tanning. Abu Hanifeh in his "Book of plants" says that Sumaq has bunches of small, intensely red berries, and it does not grow in part of the land of the Arabs except Syria^{2,3}. The fruit rind of Sumaq is commonly known as Post Sumaq which is medicinally used and has astringent property.⁴

a) Taxonomical Classification

Kingdom: Plantae, Sub kingdom: Tracheobionta, Super division: Spermatophyta, Division: Magnoliophyta, Subclass: Rosidae, Order: Sapindales, Family: Anacardiaceae, Genus: Rhus, Species: *Rhus coriaria* Bionomial name: *Rhus coriaria* Linn.

b) Vernacular Names

Sumaq (fruit of *Rhus coriaria* Linn) is known by different names worldwide including Indian sub

continent as follows: Persian: Samaka, Samak, Sumaq, Hindi: Tatrak, Tatri, Arabic: Timtima, Tamtam, Sumak, Urdu: Sumaq, English: Sumach, Sumak, Sanskrit: Tandidik, Bengali: Sumok, Kashmiri: Samak, Chokmusur, Marathi: Sumak, Punjabi: Minas, Ninawa, Samakdana, Tungla.⁵

II. HABITAT AND DISTRIBUTION

The plant is globally distributed in temperate and tropical regions and can grow on marginal lands. The plants have shallow spreading root system that prevent soil erosion and can grow on poor eroded soil. Most common sumac grown commercially on global scale is *R. coriaria* in Mediterranean and Middle East, having been cultivated for several centuries to produce a material of high quality for tanning. It is found growing naturally in region of Mediterranean, South east and central and northern regions of Turkey^{6,7,8}

a) Botanical Description

R. coriaria is a 1-3 meter high shrub or small tree. The leaves are imparipinnate with 9-15 leaflets. The inflorescence is a compact and erect panicle, the flowers are small and greenish white. The fruits are a small flattened drupe the size of the lentil of red colour, containing one lenticular polished brown seed^{3,8}

b) Description of Sumaq As Reported In Unani Literature

Sumaq is a fruit of a plant of *Rhus coriaria*. This plant grows on hard soil its height is up to 2 meter. Leaves are large and reddish in colour. Fruits aggregate equal to the size of the Mako (*Solanum nigrum*). The peel of the fruit is bitter in taste. The bitterness is increased when fruit ripens properly. There are two varieties of Sumaq

1. Sumaq Bustani (Garden Sumach)
2. Sumaq Kohi (Mountain Sumach), Mountain Sumach has more dryness than that of Garden Sumach⁹.

Part Used Medicinally Fruit, fruit rind, extract and peel is used in Italy¹⁰.

Mizaj (Temperament)

Cold and Dry in 2 degree^{11,12}

Pharmacological actions

Qabiz (astringent), Habisuddam (styptic), Maqawwie Medah (stomachic), Hazim (digestive),

Author ^α: Dept. of Ilmul Advia, National Institute of Unani Medicine, Bangalore. e-mail: drshoaibau@gmail.com

Author ^σ: Dept. of Ilmul Advia (Pharmacology), Govt. Nizamia Tibbi College, Hyderabad, Andhra Pradesh.

Author ^ρ: Dept. of Juris and Toxicology, A & U Tibbia College & Hospital, New Delhi.

Author ^ω: Dept. of anatomy, A & U Tibbia College & Hospital, New Delhi.

Musakkin (sedative), Rade (repellent), Mushtahi (appetizer) and Dafe Taffun (antiseptic).^{13,14,15}

Mawaqe Istamal (Therapeutic uses)^{11,12,16.}

1. It is used to increase the protection property of mucosal layer of stomach, it protects stomach and intestinal irritation due to bile.
2. It is used in the treatment of nausea and safrawi qai wa safrawi Diarrhoea.
3. Sumaq is used to prevent haemoptysis
4. Due to astringent property Sumaq is used to strength the mucous membrane of stomach as well as intestine
5. Sumaq is also used in haemorrhage in any part of the body due to presence of tannins
6. The sanoon of Sumaq is also used in stomatitis and Pyorrhoea
7. The Joshanda of Sumaq is used for black and shining hairs
8. Sumaq is also used in dysentery
9. The massage of Sumaq is very useful in warts of piles
10. The fine powder of post Sumaq is mixed with alcohol and used in leucorrhoea and menorrhagea
11. In conjunctivitis its Qutoor is very useful.

*Mazarrat (Toxicity)*¹⁷

For chest and liver (For cold temperament person)

Musleh (Correctives)⁹

Mastagi (*Pistacia lentiscus*), Anisoon (*Pimpinella anisun*) and Badiyan (*Foeniculum vulgare* Mill.)

Badal (Substitutes)

Sirka (Vinegar), Zarishk (*Berberis vulgaris*)⁹

Miqdare khurak (Dose)^{11, 16}

4-5gm

3-5gm

Murakkabat (Compound formulations)

1. *Hubb-e- Sumaq*¹⁸
2. *Qurs-e -Ziabaetus*¹⁹
3. *Jawarish Tabasheer*¹⁹
4. *Annushdaro Sada*¹⁷
5. *Jawarish Zarishk*¹⁹
6. *Sufuf Shahatrah*¹⁹

c) *Description of Sumaq (Rhus coriaria Linn.) as given in Modern Literature*

The modern description of Sumaq can be studied under the following categories:

III. GEOGRAPHICAL DISTRIBUTION

Sumaq (*Rhus coriaria* Linn.) belongs to the family Anacardiaceae. This family has 60 genera and some 600 species; mainly tropical shrubs and trees. *Rhus* includes 250 species. Sumaq leaves used in dyeing, tanning and fruits as a medicine. The leaves have long been well known in Europe and in the East.

Theophrastus and Dioscorides described it as the fruit of plant used for tanning. Abu Hanifeh in his "Book of plants" says that Sumaq has bunches of small, intensely red berries, and it does not grow in part of the land of the Arabs except Syria^{2, 3}. The fruit rind of Sumaq is commonly known as Post Sumaq which is medicinally used and has astringent property.

a) Macroscopic Features

Fruit: Small dark brown, hairy, hard, laterally compressed drupe; 3.5 to 4.0 cm in length and 2 to 2.5 cm in width; persistent calyx.²⁰

Seed: Small, 0.3 to 0.5 cm in length and 0.2 to 0.3 cm in width; brown polished and hard, odour spicy.²⁰

b) Microscopic Features

Fruit: Transverse section shows cuticle and a single layered epidermis with characteristic horn shaped multicellular trichomes, mesocarp 5 or 6 layered cells are thin walled, parenchymatous, filled with oil bodies and tannin, endocarp tissue crushed.

The fragments of the epidermal fruit wall cells in surface view are polygonal and moderately thick walled; show the presence of abundant, small circular cicatrices with the epidermal cells radiating around it.²⁰

Seed: Transverse section of mature seed shows testa differentiated into a radially much elongated thick walled outer layer of palisade cells filled with some brownish contents; followed by a layer of elongated but much smaller radial cells with lignified walls; the inner integumentary cells are also composed of radially much elongated thick walled palisade cells, similar to outer layer; endosperm tissue with numerous oil globules followed by tissues of the embryo present. The fragments of the dark brown testa in surface view show uniformly thick-walled, almost square or rectangular cells.²⁰

Powder: Powder is dark brown, bitter in taste; shows characteristic in horn-shaped multicellular trichomes, large and small palisade cells from testa, fragments of fruits walls with cicatrices; testa of the seeds; embryo and oil globule.²⁰

IV. SCIENTIFIC STUDIES

a) Phytochemical studies

Phytochemicals in *R. coriaria* are being used as antibacterial, antidiarrheic, antidysenteric, antihepatotoxic, antiseptic, antispasmodic, antiviral, astringent, candidicide, hepatoprotective, hepatotonic, protistocidal, analgesic, antigastric, anti-inflammatory, antioxidant, antiulcer, fungicide, cyclooxygenase-inhibitor and lipoxygenase inhibitor due to their contents of ellagic acid, gallic acid, isoquercitrin, myricitrin, myricetin, quercetin, quercitrin and tannic acid.²¹

V. PHARMACOLOGICAL STUDIES

a) Antibacterial activity

The hydro alcoholic extracts of *Rhus coriaria* ripe berries were studied against five clinical bacterial strains (Methicillin-resistant *Staphylococcus aureus* (MRSA), multi-drug resistant *Pseudomonas aeruginosa*, enterohemorrhagic *Escherichia coli* O157 (EHEC), *Proteus vulgaris* and *Klebsiella pneumonia*). *Bacillus subtilis* ATCC6633 was used as a reference strain. The zone of inhibition varies depending on bacterial species and type of extract. The results showed that the antibacterial activity of *R. coriaria* was more effective against Gram-positive bacteria than Gram-negative²¹.

b) Anti diabetic and antioxidant activity

Single dose administration of the extract significantly reduces postprandial blood glucose by 24% (at 5 hrs). In the long term experiment, on the day of 21, postprandial blood glucose (PBG) was found to be significantly lower (by 26%) compared to diabetic control group. The plant extract raised markedly serum high-density lipoprotein (HDL) by 34% and also reduced low-density lipoprotein (HDL) by 32%. Also it had noticeable antioxidant effects by elevating superoxide dismutase (SOD) and catalase (CAT) activities by 46% and 77%, respectively. However it did not show a strong effect on glutathione peroxidase (GPX) activity. The extract inhibited maltase and sucrase activities by 44% and 27%, respectively. However it made no changes in the transcript levels of INS and GLUT-4 genes. It can be concluded that constituents of *Rhus coriaria* fruits have effective components which can be utilized as useful herb for alleviation of diabetes complications²².

c) Anti hyperlipidemic activity

In an experiment, one-day-old broiler chickens (Ross 308) were used to investigate the effects of sumac fruit (*Rhus coriaria* L.) powder (SFP) on plasma concentrations of total cholesterol (TC), triglyceride (TG), high density lipoprotein (HDL-c), low density lipoprotein (LDL-c), very low density lipoprotein (VLDL-c) and plasma fasting blood sugar (FBS), as well as proportional abdominal fat. The birds were fed the basal diet (Z-SFP) or diets supplemented with 2.5 g SFP (L-SFP), 5 g SFP (M-SFP) and 10 g SFP (H-SFP) per kg diet. During the whole experimental period the H-SFP birds had a higher feed intake than the Z-SFP and L-SFP birds, though the H-SFP birds had higher feed conversion ratio compared with birds in the other treatments. No significant differences for body weight gain were recorded between the treatments. The M-SFP and H-SFP birds had lower plasma.

TC and VLDL-c concentrations than the Z-SFP and L-SFP birds. No significant differences between the treatments were indicated for plasma TG, HDL-c and LDL-c concentrations. Moreover the plasma FBS concentration of the H-SFP birds was lower than the

birds in treatments Z-SFP and L-SFP, but no significant differences were observed between the other treatments²³.

d) Antifungal activity

Phytochemical investigation of the ethanolic extracts of the seeds *Rhus coriaria* Linn. (Anacardiaceae) afforded three new aromatic compounds identified as 1-methoxy-4-hydroxy- methylene naphthalene (coriarianaphthyl ether), 7-methoxy-5-methyl benzene-4-al-oic acid (coariariaoic acid) and 1-dodecanoxy-2,8-dihydroxy-anthracene-15oic acid (coriarianthracenylester) along with known phytoconstituents n-tetracosane, n-pentacosane, anise alcohol, p-hydroxy benzyl alcohol, methyl lawsone and 2- hydroxyl methylene naphthaquinone. The structures of all the isolated compounds have been identified on the basis of spectral data analysis and chemical reactions. All the new compounds showed the antifungal activity²⁴.

REFERENCES RÉFÉRENCES REFERENCIAS

1. R.N Chopra, S.L Nayar and I.C Chopra. Glossary of Indian Medicinal Plants, Published and Printed by National Institute of Science communication and Information Resources (CSIR) New Delhi 110012 India.
2. Evans WC. Trease and Evans Pharmacognosy. 15th ed.: Elsevier. New Delhi, 2005; 27.
3. Dymock W, Warden C.J.H and Hooper D. Pharmacographia Indica: A History of the principal drugs. Vol I. Srishti book distributors New Delhi, 2005; 372-374.
4. Ibn Rushd. Kitabul-Kulliyat :Urdu translation ,Central Council for Research in Unani Medicine (Ministry of Health and Family Welfare Govt. of India) New Delhi, 1987; 301-02.
5. Nadkarni KM. Indian Materia Medica with Ayurvedic, Unani Tibbi, Siddha, Allopathic, Homeopathic, Naturopathic and Home remedies. Vol.I. Bombay: Popular Parkashan Private L.td. 2009;1061
6. Rayne S. Chemical profiles of essential oils and non polar extractable from sumach a mini-review. Electronic Journal of food and plants Chemistry 2008; 5.
7. Van BE, Wayk, Wink M. Medicinal plants of the World. Portland, USA. Timber Press: 2004.
8. Guvnc A. Anatomy of barks of *Rhus coriaria* L. Turkey: Ankara University Faculty of Pharmacy. J. of Botany 1998; 22:419-23.
9. Kabiruddin H. Khawasul advia. Published by Aijaz publishing house 2861, New Delhi ;353.
10. Ibn Baitar ZABA. Al Jameul Mufradat lil Advia wal Aghzia. (Urdu translation by CCRUM) New Delhi: CCRUM (YNM); 132-133.
11. Ghani N. Khazainul Advia; 3rd ed. 2011; Idarah Kitabul Shifa Delhi; 826.

12. Kabiruddin, Makhzanul-Mufradat, Published by Idarah Kitabul Shifa New Delhi; 262-263.
13. Hubal I. Kitabul Mukhtarat Fil Tibb (Urdu translation by CCRUM). Part. 2nd. New Delhi: Ministry of H and FW, Govt. of India: 2004; 204.
14. Abu sahal Isa Bin Yahya Ibrahim Almaseehi . Kitabul Miat. (Urdu translation CCRUM) Part 1st New Delhi: Ministry of H and FW, Govt. of India: 2008; 227.
15. Hakeem Syed Safi-Uddin Ali. Unani Adviya Mufarrada . New Delhi: 2004 186-87.
16. Hakeem MA. Bustan al Mufradat. New Delhi: Idara Kitab Al-shifa; 2002; 90-91.
17. Qashmi IA. Kitabul-Mufradat Published by International printing press Aligarh 141.
18. Kabiruddin H. Beyaze Kabir. Published by Hikmat book depo Hyderabad Dakan, YNM: 154.
19. Saeed M, editor. Hamdard Pharmacopoeia of Estern Medicine. 2nd ed. Delhi: Sri Satguru publications; 1997; 81-88, 157.
20. The Unani pharmacopoeia of India. Published by Department of Ayurveda, Yoga, and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry of Health and Family Welfare, Government of India. Part 1 vol. III, 105-106.
21. Abu B, Ghaleb A, Dauod A, Safiya K, Advan AS. Antibacterial activity of *Rhus coriaria* extracts growing in Palestine. Journal of the Islamic University of Gaza (Natural Science Series). 2005; 13(2): 147-153.
22. Mohammadi S., Montasser Kouhsari S., Monavar Feshani A. Antidiabetic properties of the ethanolic extract of *Rhus coriaria* fruits in rats. DARU 2010; 18 (4) 270-275.
23. M. Golzadeh, P. Farhoomand & M. Daneshyar. Dietary *Rhus coriaria* L. powder reduces the blood cholesterol, VLDL-c and glucose, but increases abdominal fat in broilers. 2012; S. Afr. J. Anim Sci. vol. 42 PP-398-405.
24. Onkar S, Mohammed A, Nida A. New antifungal aromatic compounds from the seeds of *Rhus coriaria* L. IRJP 2(1) 2011; 188-194.