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Medicinal use, method of administration and phytochemicals in *Zehneria scabra*

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Abstract

Herbal medicines have been used in local healing for a long time. *Zehneria scabra* which is for family of cucurbitaceae is one of the herbal medicines which have been used. Ethnomedicinal study indicated its wide use in the local healing. It is also used frequently in Ethiopia. It has a wide therapeutic spectrum which includes treating skin diseases, gonorrhoea, syphilis, cleansing uterus before a child is delivered, malaria, diarrhoea, malaise, mumps, fever, taeniasis, constipation, conjunctivitis, swelling, rabies, fever and headache, eye infection, evil eye and michi. The purpose of this review is to examine the recent ethnomedicinal research and phytochemicals of *Zehneria scabra*.

Keywords: herbal medicines, *Zehneria scabra*, ethnomedicinal

1. Introduction

Zehneria scabra is one of the well-known medicinal plants in Ethiopia. It is one of the species in the genus *Zehneria* [1]. The genus *Zehneria* belongs to sub-tribe Cucumerina of the Benincasa together with eleven other genera [2]. Its morphological characteristics is indeterminate growth habit, triangular leaf shape, green leaf color, oval fruit shape, yellow flower color, light green primary fruit color, dark green secondary fruit color, red ripe fruit color, dark brown seed coat, rough seed coat texture, 6 - 7 inter-node length (cm) and 3 - 5 petiole length (cm) [1].

The green pharmacy, which is to mean the use of plants for medicinal purposes, is increasing [3]. *Zehneria scabra* have been used as a source of medicine to treat illness since time immemorial.

Ethnobotanical Studies

Ethnobotanical studies are significant in revealing locally important plant species especially for the discovery of crude drugs. Right from its beginning, the documentation of traditional knowledge, especially on the medicinal uses of plants, has provided many important drugs of modern day [4, 5]. It is believed that about 70% of world's population use plants as their primary source of medicinal agents [6]. The World Health Organization (WHO) has estimated that more than 80% of the world's population in developing countries depends primarily on herbal medicine for basic healthcare needs [7]. In Ethiopia, 90% of the population uses traditional medicine to meet their primary healthcare needs [8]. Natural products are playing significant role in drug development. The table below reviews the ethnobotanical studies of *Zehneria scabra*.

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Table 1.1: Use(s), parts used and preparation of *Zehneria scabra*.

Use(s)	Parts used	Preparation	Administration	Citation
skin diseases, syphilis, gonorrhoea, and malaria	leaf	The leaves are boiled and decoction taken. Often is mixed with several other plants for treatment of malaria	oral	[9]
Worm	leaf	The filtrate of fresh and crushed leaves is taken	oral	[10]
Diarrhoea	leaf	Crush, homogenize with cold water and drink	oral	[11]
Malaise	whole	Boil and do steam bath	dermal	
Mumps	root	Extract the juice/oil/latex and pour or paint it	anal	
Fever	whole	Boil and do steam bath	dermal	
Taeniasis	leaf	Crush, homogenize with cold water and drink	oral	
Constipation	root	Crush, homogenize with cold water and drink	oral	
Conjunctivitis	leaf	Extract the juice/oil/latex and pour or paint it	auricular	
Swelling	leaf	Leaf and bark of <i>Zehneria scabra</i> and leaf <i>Rumex nervosus</i> are pounded and rolled in clean cloth, and tied on swelling.	dermal	[12]
Rabies for animals	root	Pounded root of <i>Zehneria scabra</i> is concocted with pounded root of <i>Ricinus communis</i> .	oral	[13]
Fever and headache	leaf	Leaf juice is given thrice times a day	oral	[14]
Snakebites	root	Tuber is consumed for the snakebites; the tuberous herbaceous perennial plant is grown at home to keep away snakes.	oral	[15]
Eye infection	leaf	Boil with leaves of <i>Eucalyptus globulus</i> , <i>Withania somnifera</i> and <i>Zehneria scabra</i> in water	inhalation	[16]
Evil eye	whole	Crush by mixing with roots of <i>Carissa spinarum</i>	fumigation	
Michi	whole	Soak in water by mixing with leaves of <i>Rumex nervosus</i> and juices of <i>Citrus aurantifolia</i> ; Boil by mixing with <i>Justicia schimperiana</i> By mixing with leaves of <i>Zehneria scabra</i> and <i>Eucalyptus globulus</i>	washing body fumigate	
Internal mitch	arial	Boiled fresh Arial part with water and steam inhaled	inhalation once	[16]

Phytochemistry

Review of the ethnobotanical studies show the extensive medicinal use of the leaf. However, the phytochemical investigation of the leaf is remains unknown. The general techniques of medicinal plant extraction include maceration, infusion, percolation, digestion, decoction, hot continuous

extraction (Soxhlet), aqueous-alcoholic extraction by fermentation, countercurrent extraction, microwave-assisted extraction, ultrasound extraction (sonication), supercritical fluid extraction, and phytonic extraction (with hydro fluorocarbon solvents). The following are among the inadequate phytochemical investigation results available.

Table 1.2: Phytochemical tests results of tuber and leaves in different solvents

№	phytochemicals	Solvents and citation				
		tuber			Leaf	
		Aqueous [14,17]	Ethanol [14,17]	Chloroform [14]	80% Methanol [18]	80% Methanol [19]
1	Phenol	+	+	+	+	+
2	Steroids	+	+	-	-	-
3	Tannins	-	-	+	+	+
4	Flavonoids	-	-	+	-	+
5	Alkaloids	-	-	-	-	-
6	Saponins	-	-	-	+	-
7	Glycosides	+	+	-	-	+
8	Proteins	+	+	+	-	-
9	Amino acids	+	+	+	-	-
10	Anthraquinone glycosides	-	-	-	+	-
11	O-anthraquinones	-	-	-	+	-
12	Phlobatannins	-	-	-	+	-
13	Diterpenes	-	-	-	-	+
14	Carbohydrates	-	-	-	-	-

(+) = Present, (-) = Absent,

Conclusion

Ethnobotanical studies showed the significance of *Zehneria scabra* in ethnomedicine. Limited phytochemical investigations have also displayed the presence of phytochemicals in a limited solvent and method of extractions. As far as its value in the treatment of various disorders, the plant should be studied in detail in the future by varying the solvents and extraction methods.

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