

# A Mini-Review of Antinociceptive Effects of Medicinal Plants from Hamedan, Iran

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## Mini Review

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## Abstract

Numerous side effects of synthetic drugs have caused medicinal plants to be regarded in recent decades as a reliable source of new drugs. Regarding the analgesic effects of many plants that are pointed in traditional medicine of Hamadan province, many studies have been performed in this field that have caused need to be reviewed. In this study, medicinal plants belong to different family and also the possible mechanisms actions of these plants are presented. The data presented in this review paper provide scientific information that might be used for analgesic drugs production in future.

**Keywords:** Hamadan; Medicinal Plants; Antinociceptive; Animal Model

## Introduction

Based on definition of international association of pain study, pain is an undesirable mental and motional experience that is associated with possible or actual damage of tissue or is created in some periods of these types of pains. Pain is created by different reasons such as harmful heat, stretch, electrical flow, necrosis, inflammation, laceration and spasm [1]. Pain is also caused by a wide variety of diseases, surgical interventions and trauma. Degenerative diseases like rheumatoid arthritis, polymyalgia rheumatica, as well as heart, asthma, cancer and inflammatory bowel diseases are also associated with inflammatory processes and pain. It is a complex experience in which cognitive, affective and behavioral features, representing psychological conditions are affected [2,3]. In most cases, pain is secondary to other complications such as diabetic nephropathy [4]. More than 50million American populations due to involving in pain conditions are

partially or totally disabled. The United States Center for Healthcare Statics carried out an eight-year study, demonstrating 32.8% U.S. populations were suffering from chronic pain [5]. Recent studies have shown that 22% of primary care patients suffered from pain which persists for more than six months and in some cases the percentage rises to 50% which is related to significant impairment of social functioning and quality of life [6]. Although pain mainly is considered as a defense mechanism which is created when a tissue is damaged and caused a person show reaction and remove pain stimulant [4], however, in sever condition it impairs social functioning and reduces quality of life [1]. Millions of people suffering from different types of damage who wish to find a drug with more effect and less side effects in order to release themselves from the pain [7].

Medicinal plants have been suggested to presence natural effective substances for prevention or treatment of pain related conditions. Drugs with herbal origin have

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attracted attention of researchers and people by having low or no side effects [8]. These medicinal plants mostly possess antioxidant activities [9] and other than pain and inflammation, are effective on a lot of hard curable diseases such as diabetes and cancer which may increase free radicals and result in pain [10,11].

Regarding importance of valuable indigenous information on traditional treatments, and pain relief, this

study was performed with the aim of documenting information of effective medicinal plants of Hamadan Province in treating the pain.

### Material and Methods

All data were obtained by major database like Web of Science, Scopus, PubMed, Google Scholar, and etc.

### Results

Family name	Scientific name	Pain test type	Fractions and used organism	Possible mechanism	Ref
Asteraceae	<i>Artemisia absinthium</i>	Tail flick test	Hydroalcoholic leaf extract	Opioid systems	[12]
	<i>Calendula officinalis</i>	Tail flick test, Writhing test	Hydroalcoholic leaf extract	Opioid systems	[13]
	<i>Sonchus asper</i>	Tail flick test, Writhing test, Formalin, Glutamate induced test.	Hydroalcoholic leaf extract	Glutamatergic and opioid systems	[14]
	<i>Inula britannica</i>	Tail flick test, Writhing test, Formalin, Glutamate induced test	Essential oil	Glutamatergic, opioid systems, L-Arginine/NO/cGMP/KATP pathway	[15]
	<i>Inula helenium</i>	Tail flick test, Writhing test, Formalin	Hydroalcoholic leaf extract	Opioid systems	[16]
	<i>Erigeron acer</i>	Tail flick test, Writhing test, Formalin	Hydroalcoholic leaf extract	Opioid systems	[17]
<i>Araliaceae</i>	<i>Hedera helix</i>	Tail flick test, Writhing	Hydroalcoholic leaf extract	Opioid systems	[18]
<i>Anacardiaceae</i>	<i>Rhus coriaria</i>	Tail flick test, Writhing test, Formalin,	Hydroalcoholic leaf extract	Opioid systems	[19]
Apiaceae	<i>Ducrosia anethifolia</i>	Tail flick test, Writhing test, Formalin,	Essential oil	Opioid systems	[20]
	<i>Eryngium pyramidale</i>	Tail flick test, Writhing test, Formalin,	Essential oil leaf	Opioid systems	[21]
	<i>Pimpinella anisum</i>	Tail flick test, Writhing test, Formalin	Methanolic leaf extract	Opioid systems	[22]
<i>Comositeae</i>	<i>Tanacetum balsamita</i>	Tail flick test, Writhing test, Formalin,	Essential oil leaf	Opioid systems	[23]
<i>Cucurbitaceae</i>	<i>Bryonia dioica</i>	Tail flick test, Writhing test, Formalin,	Hydroalcoholic leaf extract	Opioid systems	[24]
<i>Lamiaceae</i>	<i>Lallemantia iberica</i>	Tail flick test, Writhing test, Formalin,	Hydroalcoholic leaf extract	Opioid systems	[25]
<i>Liliaceae</i>	<i>Allium hirtifolium</i>	Tail flick test, Writhing test, Formalin,	Hydroalcoholic leaf extract	Opioid systems	[26]
<i>Malvaceae</i>	<i>Althaea officinalis</i>	Tail flick test, Writhing test, Formalin	Essential oil leaf	Opioid systems	[27]
<i>Oxalidaceae</i>	<i>Biophytum sensitivum</i>	Tail flick test, Writhing test, Formalin	Hydroalcoholic leaf extract	Opioid systems	[28]
<i>Rosaceae</i>	<i>Potentilla reptans</i>	Tail flick test, Writhing	Hydroalcoholic leaf	Opioid systems	[29]

		test, Formalin	extract		
<i>Passifloraceae</i>	<i>Passiflora caerulea</i>	Tail flick test, Writhing test, Formalin	Methanolic extract	Opioid systems	[30]
<i>Umbelliferae</i>	<i>Echinophora Platyloba</i>	Tail flick test, Writhing test, Formalin	Hydroalcoholic leaf extract	Opioid systems	[31]
<i>Verbenaceae</i>	Lemon Verbena	Tail-flick, and writhing	Aqueous extract	Opioid systems	[32]
<i>Zygophyllaceae</i>	<i>Tribulus terrestris</i>	Tail flick test, Writhing test, Formalin	Hydroalcoholic leaf extract	Opioid systems	[33]

## Conclusion

Our results from the present study have been shown that among the mentioned medicinal plants, Asteraceae family had used more than other family for evaluation of pain.

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