

What Effects do the Genus Prunus Plants Have?

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ABSTRACT

Genus *Prunus* is peach, plum, apricot, almond like cherry delicious among temperate fruit crops, important because it contains edible, drupe and stone fruits with ornamental value as well. Genus mostly spreads in the temperate regions of the Northern Hemisphere, such as northern Asia, North America and Europe. Species which have global economic importance, harvested or grown from the wild for timber and medicinal purposes. The use of these species, which have been used in folk medicine for many years, differs from country to country and plant cover. Main species used for traditional medical purposes are *Prunus americana*, *Prunus armeniaca*, *Prunus avium*, *Prunus cerasus*, *Prunus dulcis*, *Prunus ceracifera*, *Prunus cerasoides*, *Prunus domestica*, *Prunus mahaleb*, *Prunus mume*, *Prunus persica*, *Prunus salicina*, etc. When the studies are examined, it is seen that there are many *in vivo*, *in vitro* and clinical studies that carried out the different biological effects of the extracts obtained from different parts of these species. The literature presented here may suggest new inputs for further biological activity studies and reveal the relationship between traditional use and existing scientific studies.

KEYWORDS: *Prunus* genus; review; *in vivo*; *in vitro*; clinical studies

INTRODUCTION

Genus *Prunus* belongs to the Rosaceae family and the Pruneeae subfamily, and include approximately 430 species (distributed among five sub-genera, namely, *Padus*, *Amygdalis*, *Cerasus*, *Prunophora* and *Laurocerasus*) of deciduous, evergreen trees and shrubs that grow temperate regions of the Northern hemisphere [1].

Prunus commonly known as "cherry" or "plum", which consist of plums (*P. domestica*, *P. salicina*), cherries (*P. avium*, *P. cerasus*, *P. serotina*), peaches (*P. persica*), nectarines, apricots (*P. armeniaca*) and almonds. Since it contains species that are edible fruits, considered one of the most economically and agronomically important plant genera [2].

Ethnopharmacological studies in various years show that different parts of plants belonging to the genus are used for a wide variety of purposes worldwide.

In Turkey, *P. avium* used in against kidney stone, obesity, hypertension, hyperlipidemia; *P. laurocerasus* used in hemorrhoids, stomach pain, high fever, against cough; *P. divaricata* Ledeb. subsp. *divaricata* used in cold flu, against kidney stone, obesity, hypertension, hyperlipidemia; *P. domestica* used in constipation, rheumatism; *P. persica* used in eczema; *P. mahaleb* used in urinary tract infection and as antidiabetic, aphrodisiac, expectoran, diuretic; *P. dulcis* used in stomach pain, urinary tract infection, against kidney stone, obesity, hypertension, hyperlipidemia and as wound healing,

antidiabetic; *P. spinosa* L. subsp. *Dasyphylla* used as cardiotoxic; *P. divaricata* subsp. *Ursina* used in diabetes, fluenza, asthma, kidney complaints [3-10].

In Pakistan, *P. armeniaca* used as laxatives; *P. domestica* used in stomach pain, constipation, against jaundice; *P. persica* used as wound healing, skin inflammations [11].

In Argentina, *Prunus persica* used as antidiarrhea, digestive problems [12].

In Spain, *P. avium* used as stomach pain and antihyperuricemia, *P. spinosa* used as analgesic [13].

In Portugal, *P. avium* ssp. *juliana* used as diuretic [14].

In Italy; *P. spinosa* and *P. communis* used as antidiarrheic; *P. laurocerasus* used in headache; *P. dulcis* eczema and sun allergy [15, 16].

In Iranian and Arabic country, *P. mahaleb* used as analgesic, sedatives, vasodilator [17, 18].

In China and Malaysia, seed kernels of *P. cerasoides* are used for cough and rheumatic diseases. In Ayurveda, the plant is called "padmaka" and is used in the treatment of skin diseases. Leaf extract is used in prostate and urinary diseases [19].

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When biological effects studies of species belonging to *Prunus* genus are examined, it is seen that they have many different effects. Biological effects studies on *Prunus* species are grouped as *in vitro*, *in vivo* and clinical studies and presented in tables.

In vitro studies

In this heading, *in vitro* activities of raw extracts and sub-fractions obtained from various parts of plants belonging to the genus *Prunus* are compiled. Among the extracts and fractions tested, those with high efficacy are indicated in the table. These experiments were mostly carried out by measuring the percent inhibition of the enzyme.

Table1. Biological effect of *Prunus* Species (*In Vitro* Studies)

Effect	Species	Part of Plant	Extract (Ext.)	Reference
Lung-protective				
	<i>P. mume</i>	Fructus	-	[20]
Anti-alzheimer				
	<i>P. armeniaca</i>	Leaf	Essential oil	[21]
	<i>P. domestica</i>	Leaf	Essential oil	[21]
	<i>P. persica</i>	Fruit	%60 acetone ext.	[22]
		Kernel	-	[23]
Anti-allergic				
	<i>P. domestica</i>	Fruit	Water ext.	[24]
	<i>P. persica</i>	Fruit	%70 ethanol ext.	[25]
		Seed	Methanol ext.	[26]
Anti-androgenic				
	<i>P. africana</i>	Stem bark	Dicloromethan ext.	[27]
Anti-dermatophytic				
	<i>P. eburnea</i>	Stem bark	Methanol ext.	[28]
Antidiabetic				
	<i>P. avium</i>	Stem	Water ext.	[29]
	<i>P. cerasus</i>	Fructus	%80 ethanol ext.	[30]
	<i>P. domestica</i>	Fructus	Water ext.	[31]
	<i>P. dulcis</i>	Seed	% 70 ethanol ext.	[32]
		Seed skin	Water ext. of %60 acetone fraction	[33]
	<i>P. persica</i>	Pulp of fructus	%80 methanol ext.	[34]
		Endokarp	-	[23]
Anti-inflammatory				
	<i>P. mahaleb</i>	Fructus	Ethanol ext.	[35]
	<i>P. persica</i>	Fructus	%70 Ethanol ext.	[36]
	<i>P. persica</i> var. <i> davidiana</i>	Flower	Methanol ex.	[37]
	<i>P. serotina</i> subsp. <i> capuli</i>	Fructus	%80 methanol ex.	[38]
	<i>P. spinosa</i>	Flower	%70 methanol ex.	[39]
	<i>P. tucumanensis</i>	Bark	methanol and chloroform ex.	[40]
	<i>P. yedoensis</i>	Flower	% 40 1,3-propanediol ext.	[41]
			Essential oil	[42]
		Kabuk	% 30 ethanol ext.	[43]
Anthelmintic				
	<i>P. persica</i>	Leaves	Etanolü etil asetatlı ve petrol eterli ekstre	[44]
Anti-hyperlipidemic				
	<i>P. domestica</i>	Fruit	Water ext.	[45]
Anti-hypertension				
	<i>P. domestica</i>	Seed	Peptides ext.	[46]
Anti-microbial				
	<i>P. africana</i>	Bark	Acetone ext.	[47]
			Methanol ext.	[47]
		Stem bark	Ethanol ext.	[48]
	<i>P. amygdalus</i>	Fructus	%95 ethanol ext.	[49]
		Leaves	Water ext.	[50]
	<i>P. armeniaca</i>	Fructus	%95 ethanol ext.	[49]
			ethanol ext.	[51]
			Methanol ext.	[52]
			Methanol ext. of	[53]

	Tohum	buthanol fraction Methanol ext.	[54]
		Essential oil	[55]
	Kernel	Hekzan ext.	[56]
		Water ext.	[57]
<i>P. avium</i>	Stem	Methanol ext. and water ext.	[58]
	Fructus	Water ext.	[59]
<i>P. cerasoides</i>	Stem bark	Ethyl acetate ext.	[60]
		Water ext.	[61]
<i>P. cerasus</i>	Fruit	Fruit juice	[62]
<i>P. cornuta</i>	Bark	Methanol ext.	[63]
<i>P. domestica</i>	Fruit	Ethanol ext.	[64]
		Ethyl acetate ext.	[64]
<i>P. dulcis</i>	Seed	Methanol ext.	[54]
<i>P. laurocerasus</i>	Fruit	Methanol ext.	[65]
<i>P. mahaleb</i>	Seed	Ethanol ext.	[66]
<i>P. persica</i>	Bark	Methanol ext.	[67]
<i>P. sargentii</i>	Bark	%75 ethanol ext.	[68]
<i>P. spinosa</i>	Fruit	Methanol and water ext.	[69]
<i>P. tucumanensis</i>	Bark	Methanol ext.	[40]

Antimutagenic

<i>P. jamasakura</i>	Bark	Methanol ext. of dichlorometan fraction	[70]
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Antioxidant

<i>P. amygdalus</i>	Seed	Acetone ext.	[71]
	Leaves	DMSO ext.	[50]
	Green endocarp	Methanol ext.	[72]
	Peel	Total polysaccharide fraction	[73]
<i>P. armeniaca</i>	Fructus	%80 ethanol ext.	[74]
		Methanol ext. Methanol: ethylacetate:petroleum ether(1:1:1)	[52] [75]
	Kernel	Methanol: ethylacetate:petroleum ether(1:1:1)	[75] [56]
<i>P. avium</i>	Stem	Hexane ext. %50 ethanol ext.	[29] [58]
		Methanol and water ext. Water ext.	[58] [29]
	Fructus	Ethanol ext.	[76]
	Petioles	Methanol ext.	[77]
	Leaves	%60 methanol ext.	[78]
		Water ext.	[57]
		-	[79]
		Total flavonoid ext.	[80]
<i>P. cerasifera</i>	Peel	Acetone/methanol/water/f ormic acid (40:40:20:0.1) ext.	[81]
	Leaves and Branches	Condensed Tannin ext.	[82]
<i>P. cerasus</i>	Fruit	Ethanol ext.	[83]
<i>P. davidiana</i>	Fruit	Methanol ext. of ethyl acetate fraction	[84]
<i>P. domestica</i>	Flower	%80 acetone ext.	[85]
	Fructus	Ethanol ext.	[64, 86]
		Ethyl acetate ext.	[64, 86]
		Methanol ext.	[86]
	Seed	Peptide ext.	[46]
	Leaves	%60 methanol ext.	[78]
		Total flavonoid ext.	[87]

<i>P. dulcis</i>	Seed	Acetone ext.	[88]
	Leaves	Chloroform ext.	[89]
	Kernel	Methanol ext.	[90]
<i>P. dulcis</i> var. <i>amara</i>	Kernel	Methanol ext.	[91]
<i>P. grisea</i>	Leaves	%95 ethanol ext.	[92]
<i>P. mahaleb</i>	Fruit	Water and ethanol ext.	[93]
<i>P. mume</i>	Fruit	Ethanol ext.	[94]
		Ethyl acetate and water fraction of methanol ext.	[95]
		Ethyl acetate fraction of methanol ext.	[96]
<i>P. padus</i>	Flowers and leaves	Water ext.	[97]
		%70 Methanol ext.	[98]
		Water ext.	[99]
<i>P. salicina</i>	Bark	Water ext.	[99]
	Fruit	%95 methanol ext.	[100]
<i>P. persica</i>	Fruit	-	[101]
	Bark	Methanol ext.	[67]
<i>P. persica</i> var. <i>platycarpa</i>	Fruit	Fruit juice	[102]
		%60 acetone ext.	[22]
	Endocarp	-	[23]
	Peel	Ethanol ext.	[103]
	Seed	Ethanol ext.	[103]
<i>P. serotina</i> subsp. <i>capuli</i>	Kernel	Ethanol ext.	[103]
	Fruit	%80 methanol ext.	[38]
<i>P. serrulata</i> var. <i>spontanea</i>	Blossom	methanol and acetone ext.	[104]
	Leaves and branch	Etanollü ve sulu ekstre	[105]
<i>P. spinosa</i>	Flower	%70 methanol ext.	[39]
	Fruit	% 70 methanol ext.	[106]
<i>P. tucumanensis</i>		Methanol ext.	[69]
	Bark	Methanol ext.	[40]
Antiosteoporosis			
<i>P. mume</i>	Fruit	Methanol ext.	[107]
		Ethyl acetate and water fractions of methanol ext.	[95]
		Water ext.	[108]
Anti-psoriatic			
<i>P. armeniaca</i> var. <i>ansu</i>	Seed	Essential oil	[109]
Antityrosinase ve Melanogenesis Inhibition			
<i>P. amygdalus</i>	Flower	%50 ethanol ext.	[110]
<i>P. armeniaca</i>	Flower	%50 ethanol ext.	[110]
	Fruit	Phosphate buffer ext.	[111]
<i>P. avium</i>	Bark	Methanol ext.	[112]
<i>P. campanulata</i>	Leaves	Acetone ext.	[113]
<i>P. cerasifera</i>	Branch	Condensed tannins ext.	[82]
	Leaves	Condensed tannins ext.	[82]
<i>P. davidiana</i>	Stem	Methanol ext.	[114]
	Fruit	Ethyl acetate fractions of methanol ext.	[84]
<i>P. mume</i>	Flower	%50 ethanol ext.	[110]
		-	[115]
	Flower buds	Ethyl acetate and <i>n</i> -butanol fractions of methanol ext.	[116]
<i>P. padus</i>	Fruit	Water ext.	[97]
	Bark	Water ext.	[99]
<i>P. persica</i>	Flower	%50 ethanol ext.	[110]
		Methanol ext.	[117]
<i>P. sargentii</i>	Fruit	-	[118]
	Bark	%75 ethanol ext. of ethyl acetate fractions	[68]

	<i>P. serrulata</i> var.	Branch	Ethanol ext.	[105]
	<i>spontanea</i>	Leaves	Ethanol ext.	[105]
	<i>P. yedoensis</i>	Flower	%50 ethanol ext.	[110]
Antiviral				
	<i>P. cerasus</i>	Fruit	%80 methanol ext.	[119]
	<i>P. lannesiana</i>	Fruit	%80 methanol ext.	[119]
	<i>P. persica</i>	Leaves	Methanol ext.	[120]
	<i>P. sargentii</i>	Stem	Methanol ext.	[120]
		Fruit	%80 methanol ext.	[119]
		Leaves	Methanol ext.	[120]
	<i>P. yedoensis</i>	Fruit	%80 methanol ext.	[119]
Protective skin damage and Antiphotaging				
	<i>P. avium</i>	Bark	Methanol ext.	[112]
	<i>P. domestica</i>	Leaves	Ethanol ext	[121]
	<i>P. padus</i>	Bark	Water ext.	[99]
	<i>P. persica</i>	Flower	%80 ethanol ext.	[122]
		Fruit	-	[123]
	<i>P. yedoensis</i>	Blossom	1, 3-propanediol ext.	[124]
	<i>P. yeonensis</i>	Blossom	1, 3-propanediol ext.	[125]
Memory vitalizing				
	<i>P. domestica</i>	Fruit	Hydroalcohol ext.	[126]
Hepatoprotective				
	<i>P. domestica</i>	Fruit	Ethyl acetate ext.	[127]
Immunostimulatory				
	<i>P. avium</i>	Fruit	Polysaccharides ext.	[128]
	<i>P. cerasus</i>	Fruit	Ethyl acetate ext.	[129]
	<i>P. mume</i>	Fruit	Ethanol ext.	[130]
	<i>P. salicina</i>	Fruit	Methanol ext.	[131]
Insecticidal				
	<i>P. persica</i>	Stem bark	Methanol ext.	[132]
Cardioprotective				
	<i>P. armeniaca</i>	Fruit	%70 methanol ext.	[133]
	<i>P. cerasus</i>	Fruit	Fruit juice	[134]
	<i>P. persica</i>	Fruit	Ethyl acetate ext.	[36]
Gastroprotective				
		<i>P. mume</i>	Fruit	Methanol ext.
		Fruit	Fruit juice	[135]
Neuroprotective				
	<i>P. domestica</i>	Fruit	Water ext.	[136]
Enhance estradiol secretion				
	<i>P. mume</i>	Tohum	Methanol ext. of ethyl acetate fraction	[96]
				[137]
Prebiotic				
	<i>P. amygdalus</i>	Seed	-	[138]
Cytotoxic				
	<i>P. africana</i>	Bark	%30 ethanol ext.	[139]
	<i>P. amygdalus</i>	Kernel	Ethyl acetate ext.	[140]
		Peel	Total polysaccharide fraction	[73]
	<i>P. angustifolia</i>	Leaves	Methanol ext.	[141]
	<i>P. armeniaca</i>	Kernel	%80 ethanol ext.	[142]
			Water ext.	[57]
	<i>P. avium</i>	Fruit	%50 ethanol ext.	[143]
			-	[79]
			Ethanol ext. of ethyl acetate fraction	[144]
			Methanol ext.	[145]
	<i>P. domestica</i>	Meyve	%50 ethanol ext.	[143]
			Ethanol ext.	[146]
			Ethyl acetate ext.	[64]
	<i>P. dulcis</i>	Seed	Seed oil	[147]
	<i>P. lauracerasus</i>	Fruit	DMSO ext.	[148]
			Water ext.	[149]

<i>P. mahaleb</i>	Fruit	Ethanol ext.	[35]
<i>P. mume</i>	Fruit	-	[150]
		Ethanol ext.	[151]
		Hexane fraction of Methanol ext.	[152]
		Water ext.	[153]
	Leaves	Ethanol ext.	[154]
<i>P. persica</i>	Fruit	%60 acetone ext.	[22]
	Kernel	%80 ethanol ext.	[142]
<i>P. salicina</i>	Immature fruit	%60 acetone ext.	[155]
<i>P. serrulata var. spontanea</i>	Flower	Methanol ext.	[104]
<i>P. spinosa</i>	Flower	Ethanol ext.	[156]
	Fruit	%80 methanol ext	[157]
Cysticidal			
<i>P. serotina subsp. capuli</i>	Bark	Methanol ext.	[158]

In vivo studies

In this section, biological effects studies of crude extract and sub-fractions obtained from *Prunus* genus species on experimental animals are reviewed. Studies have shown that plants of the *Prunus* species are effective on many systems such as nervous, endocrine, immunity, cardiovascular, gastrointestinal and urinary.

Table2. Biological effect of *Prunus* Species (In Vivo Studies)

Effect	Species	Part of Plant	Extract (Ext.)	Reference
Anti-alzheimer				
	<i>P. persica</i>	Seed	Water ext.	[159]
Anksiyolitik				
	<i>P. americana</i>	Fruit	Ethanol ext.	[160]
Antibenign prostatik hiperplazi				
	<i>P. africana</i>	Bark	%30 ethanol ext.	[139]
			Chloroform ext.	[161]
			Methanol ext.	[162]
	<i>P. amygdalus</i>	Bark	Methanol ext.	[162]
	<i>P. armeniaca</i>	Bark	Methanol ext.	[162]
	<i>P. cerasoides</i>	Bark	Methanol ext.	[162]
	<i>P. domestica</i>	Bark	-	[163]
			Methanol ext.	[162]
	<i>P. persica</i>	Bark	Methanol ext.	[162]
Anti-depressant				
	<i>P. amygdalus</i>	Seed	-	[164]
Anti-diabetic				
	<i>P. amygdalus</i>	Seed	Defatted seed	[165]
	<i>P. avium</i>	Fruit	Acid-ethanol ext.	[166]
	<i>P. cerasus</i>	Fruit	Acid-ethanol ext.	[166]
		Pulp	Ethyl acetate ext.	[167]
		Seed	Ethyl acetate ext.	[167]
	<i>P. divaricata</i>	Fruit	Fruit juice	[168]
			Hydroalcoholic ext.	[168]
	<i>P. laurocerasus</i>	Fruit	-	[169]
	<i>P. microcarpa</i>	Fruit	Acid-ethanol ext.	[166]
	<i>P. mahaleb</i>	Seed	-	[170]
	<i>P. mume</i>	Fruit	Ethanol ext.	[171]
		Fruit	Phenolic ext.	[172]
		Leaves	%70 ethanol ext.	[173]
	<i>P. persica</i>	Leaves	Ethyl acetate fractions of %90 ethanol ext.	[174]
Anti-inflammatory				
	<i>P. armeniaca</i>	Kernel	-	[175]
			Kernel oil	[175]
	<i>P. cerasoides</i>	Fruit	%50 ethanol ext.	[176]
	<i>P. davidiana</i>	Stem	Methanol ext.	[177]
	<i>P. dulcis</i>	Seed	Water ext.	[178]

<i>P. jamasakura</i>	Cortex	Water ext.	[179]
<i>P. laurocerasus</i>	Leaves	Ethyl acetate fractions of ethanol ext.	[180]
<i>P. mahaleb</i>	Kernel	Ethanol and petrol etheroleum ext.	[181]
<i>P. padus</i>	Stem	Dichloromethan fractions of methanol ext	[182]
<i>P. persica</i>	Steam bark	Methanol ext.	[183]
<i>P. persica</i> var. <i>nucipersica</i>	Kernel	Ethanol ext.	[184]
<i>P. yedoensis</i>	Kernel	%30 ethanol ext. Ethyl acetate ext.	[43] [185]
Anti-hyperlipidemic			
<i>P. amygdalus</i>	Green endocarp	Methanol ext.	[72]
<i>P. davidiana</i>	Stem	Methanol ext.	[186]
<i>P. dulcis</i>	Seed	-	[187]
<i>P. pedunculata</i>	Seed	Seed oil	[188]
<i>P. persica</i>	Leaves	Ethyl acetate fractions of %90 ethanol ext.	[174]
Anti-hipertensive			
<i>P. domestica</i>	Fruit	Water, methanol, Acetone and chloroform ext.	[189]
<i>P. yedoensis</i>	Bark	Methanol ext.	[190]
Antinociceptive			
<i>P. laurocerasus</i>	Leaves	Ethyl acetate fractions of ethanol ext.	[180]
<i>P. padus</i>	Stem	Dichloromethan fractions of methanol ext.	[182]
Antioxidant			
<i>P. avium</i>	Fruit	Acid-ethanol ext.	[191]
<i>P. cerasus</i>	Fruit	Acid-ethanol ext. Fruit juice	[191] [192]
<i>P. laurocerasus</i>	Fruit	Water ext.	[193]
<i>P. microcarpa</i>	Fruit	Acid-ethanol ext	[191]
<i>Prunus spinosa</i>	Flower	%70 Methanol ext.	[194]
Antiosteoporosis			
<i>P. domestica</i>	Fruit	Water ext.	[195]
Antitumoral			
<i>P. jamasakura</i>	Cortex	Methanol ext.	[196]
<i>P. mume</i>	Fruit	Fruit juice Water ext.	[197] [153]
<i>P. persica</i> var. <i>rich Lady</i>	Fruit	Water ext.	[198]
<i>P. serotina</i>	Bark	Methanol ext.	[199]
Protective Diabetik retinopathy			
<i>P. cerasus</i>	Seed	Total flavonoid fraction	[200]
<i>P. mume</i>	Flower	Methanol ext.	[201]
Gastroprotective			
<i>P. armeniaca</i>	Kernel	Kernel oil	[202]
Hepatoprotective			
<i>P. armeniaca</i>	Fruit	Water ext.	[203]
	Leaves	Methanol and water ext.	[204]
<i>P. laurocerasus</i>	Fruit	Waterv ext.	[193]
<i>P. mume</i>	Fruit	%75 ethanol ext.	[205]
<i>P. persica</i>	Leaves	%95 ethanol ext.	[206]
Hypouricemic			
<i>P. cerasus</i>	Fruit	Fruit juice	[192]
<i>P. mume</i>	Flower	Buthanol ext.	[207]
	Fruit	Methanol ext.	[208]
	Seed	Ethyl acetate ext.	[207]

Immunomodulatory				
	<i>P. cerasus</i>	Fruit	Ethyl acetate fraction of methanol ext.	[129]
	<i>P. mume</i>	Fruit	Ethanol ext.	[130]
Cardioprotective				
	<i>P. cerasus</i>	Kernel	-	[209]
	<i>P. domestica</i>	Fruit	Water, methanol, Acetone and chloroform ext.	[189]
			Water ext.	[210]
Laxative				
	<i>P. mume</i>	Fruit	Water ext.	[211]
Anti-obesity				
	<i>P. avium</i>	Fruit	Total anthocyanin ext.	[212]
	<i>P. salicina</i>	Fruit	Water ext.	[213]
Prebiotic				
	<i>P. amygdalus</i>	Seed	Seed	[138]
Cysticidal				
	<i>P. serotina</i> subsp. <i>capuli</i>	Bark	Methanol ext.	[158]
Vasodilator				
	<i>P. serotina</i>	Fruit	Dichloromethan ext.	[214]
Wound healing				
	<i>P. laurocerasus</i>	Fruit	Methanol ext.	[65]
	<i>P. yedoensis</i>	Fruit	Methanol ext.	[215]

Clinical studies

Clinical studies were determined by comparing different numbers of patients or healthy people and the control group by taking measurements in a certain period of time.

Table3. Biological effect of *Prunus* Species (Clinical Studies)

Effect	Species	Part of plant	Extract (Ext.)	Reference
Anti-inflammatory				
	<i>P. cerasus</i>	Seed	-	[216]
	<i>P. yedoensis</i>	Flower	%40 1, 3-propanediol ext.	[41]
Antihypertensive				
	<i>P. mume</i>	Fruit	Polyphenol fraction	[217]
Diuretic				
	<i>P. avium</i>	Stalk	Stalk powder	[218]
Hepatoprotective				
	<i>P. mume</i>	Fruit	-	[219]
Gastroprotective				
	<i>P. mume</i>	Fruit	Fruit	[220]

“-“Not mentioned

CONCLUSION

This scientific review focuses on the traditional uses and biological activity studies of the genus *Prunus*. Thus, the link between ongoing research and ethnobotanical claims has been provided. Ethnobotanical studies shows that the plants of the genus *Prunus* have a long history as a folk medicine for the treatment of fever, diarrhea, constipation, cold flu, hyperlipidemia, cough, hypertension, diabetes, asthma, jaundice, colic, dermal problems and widely used as a remedy for numerous events. The biological effects studies conducted were examined in 3 separate sections, *in vivo*, *in vitro* and clinical studies. *In vitro* studies have shown that many effects of plants belonging to the genus have been studied. Although many effects of genus plants have been studied in *in vitro* studies, antimicrobial, antioxidant and cytotoxic effects are quite remarkable. It is known that phenolic compounds show high radical scavenging activity and these radicals cause the formation of many diseases, especially cancer. The antioxidant and cytotoxic effects of

Prunus species rich in phenolic compounds such as flavanoids, phenolic acids, anthocyanins, proanthocyanins, catechins are expected to be found to be high.

When *in vivo* studies are investigated, it is seen that the effect against diabetes, inflammation and benign prostate hyperplasia are more researched. The use of plants belonging to the genus mostly as diabetes and anti-inflammatory in ethnobotanical studies shows that researchers want to explain these effects with scientific data. Bark extracts of many different *Prunus* species were analyzed against benign prostate hyperplasia and the highest effect was found mostly in methanol extracts. The chemical content analysis of *P. domestica*, which has the highest antibenign prostate hyperplasia effect, showed that the β -sitosterol content was found to be higher than the others and the compound responsible for the effect was thought to be this compound.

In clinical studies, it is seen that mostly research is carried out on *Prunus mume* fruit. *P. mume* is very important for Asia people. Widely consumed as food, known as Ume in Japan, Mei in China, and Oumae in Korea and used to relieve a lot of disorders. Clinical studies in the literature have been carried out to illuminate the traditional use of this plant.

All ethnobotanical and biological activity studies are evaluated together, it is revealed valuable of *Prunus* species. It is very important in terms of potential drug candidate as well as being among the species that consume as food worldwide.

The mechanism of biological effects detected by further studies can be clarified or new effects can be discovered.

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