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Phytopharmacological review of *Prunus domestica* L.- A detailed review

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ABSTRACT

Modern drugs, no doubt, give fast relief but are associated with several adverse aftereffects. Plant-derived drugs are associated with no side effects. Plants also provide the best options for discovering the effective and safe medications. Native people have treated a variety of ailments with medicinal herbs since ancient times. Plants have long been an excellent source of medications, and many of the pharmaceuticals that are now accessible were produced directly or indirectly from plants. *Prunus domestica* L. is a medicinal plant that grows 6 to 15 meters tall and belongs to the Rosaceae family. It is considered to have originated around the Caspian Sea. Plum is now grown all over the world, particularly in Central, South, and Southeast Europe, as well as in North Africa, West Asia, India, North America, Australia, New Zealand, South Africa, and South America. According to many reports, *P. domestica* is used medicinally in conjunction with other drugs to treat the conditions like leucorrhoea, irregular menstruation, postpartum debility, suppressed immunity, and bad eyesight. It is also used in the prevention of asthma, arthritis, hypercholesterolemia, Alzheimer disease, anaemia, and cardiovascular diseases. Therefore, in addition to a thorough botanical description, the present chapter is primarily concerned with the phytochemicals and pharmacological review of *P. domestica*.

Keywords: *Prunus domestica* L., Rosaceae, Caspian Sea, Phytochemical, and Pharmacological activities.

INTRODUCTION

Since ancient times, to cure diseases, people have looked up the drugs derived from natural products. In ancient times, there was no sufficient information available regarding the cause of the illness or concerning the plant utilization to cure different ailments, all was dependent on experience. As modernization happens, information on the use of medicinal plants to cure specific ailments has been discovered. That is why plant-based medicines are getting rapid attention for their therapeutic properties. Since ancient times, people have tried to discover medications for the alleviation of pain and the cure of different diseases. In parallel to the advancement of civilization and humankind, medicinal plants have been identified, noted for their healing properties, and conveyed to successive generations (Petrovska, 2012).

Among the well-known medicinal plants, *Prunus domestica* L. is one of the important medicinal plants used to cure different ailments (Chopra et al., 2009). *P. domestica* is commonly known as plum. It is a member of the family Rosaceae and belongs to the genus *Prunus* (Hussain et al., 2021; Nakatani et al., 2000).

Rosaceae (The Rose Family)

Rosaceae is the 19th largest family of plants. This family comprises more than 100 genera and 2830-3100 species. The morphology of this family can be described as including herbs, shrubs, or trees that are sometimes rhizomatous, climbing, or thorny (Hummer and Janick, 2009).

Genus *Prunus*

Due to the abundance of species that provide fruits, oils, lumber, and decorative items, the genus *Prunus* is significantly economical (Lee and Wen, 2001). There are roughly 400 species in this genus (Das et al., 2011; Hanelt, 1997). This genus is extensively dispersed in Asia, Africa, South America, Australia, and tropical and sub-tropical zones (Chin et al., 2014). Some scholars have classified the genus *Prunus* into three, four, five, six, and even seven ranks of genera and sub-genera based on the fundamental morphology of the fruit (Lee and Wen, 2001; Shi et al., 2013; Telichowska et al., 2020).

Plant Description (*Prunus domestica* L.)

Trees (Figure 1) are generally 6-15 m tall. Branches may be brown, unarmed, glabrous, or have some spines. Branchlets are usually pale red to achromatic and sparsely pubescent. The bark develops longitudinal cracks after being smooth initially. Winter buds are often glabrous and reddish-brown in colour (Michaelis, 2020; Nayudu and Sowjanya, 2017).

Simple, alternating plum leaves (Figure 2) measure 3-10 × 1.8-6 cm, thick, obovate to elliptical, crenate to serrate, glabrous and dull green on the adaxial surface, densely pubescent to subglabrous on the abaxial surface, and the hairs are often restricted to the midrib and veins with the adulthood of leaves (Roussos et al., 2016).

Before the leafy growth in the spring, the blooms appear. They grow alone or in fascicles of two or four blooms on the lateral buds of branchlets. When completely opened, flowers have a diameter of 10-15 mm (in some cases up to 25 mm), a pedicel length of 5-30 mm, and they are fragrant. It is pubescent in the hypanthium. Five sepals are imbricated and are ovate with an acute apex. Flowers also have five white or greenish-white petals that are imbricated on the rim of the hypanthium and are obovate in shape with a rounded to obtuse tip. The androecium bears 20-30 stamens with uneven filaments arranged in two whorls. One carpel, which forms an uninoculated ovary in a superior position, glabrous to villous, in a terminal and elongated style, makes up the gynoecium (Lim, 2012; Michaelis, 2020).

The fruits (Figure 3) are reddish or dark purple, globose, or ovoid drupes with blossoms, ranging in size from 4 to 8 cm (Komor and Devi, 2016). The seed (Figure 3) of the plum looks much like an almond but is smaller in size and covered with a hard material called seed coat.

Figure 1: *P. domestica* tree with fruits

Figure 2: Leaves and flower of *P. domestica*

Figure 3: Fruits and seeds with seed coats

Table 1 Taxonomical classification of *P. domestica* (Hussain et al., 2021; Nayudu and Sowjanya, 2017)

Kingdom	Plantae
Subkingdom	Tracheobionta (Vascular plants)
Super-division	Spermatophyta (Seed plants)
Division	Magnoliophyta (Flowering plant)
Class	Magnoliopsida (Dicotyledons)
Subclass	Rosidae
Order	Rosales
Family	Rosaceae (Rose family)
Subfamily	Amygdaloideae
Tribe	Amygdaleae
Genus	*Prunus*
Sub-genus	*Prunus* subg. *Prunus*
Section	*Prunus* sect. *Prunus*
Species	*Prunus domestica*

Other Names

P. domestica is commonly called "Plum", which can cause confusion with other species that have this common name and have comparable traits, such as the Japanese plum (*P. salicina*) and the myrobalan or cherry plum (*P. cerasifera*). Other common names of *P. domestica* are garden plum, european plum, gage plum, and prune plum (Lim, 2012).

Vernacular Names (Lim, 2012)

Afrikaans: Pruim

Arabic: Barqûq, Iggâss

Armenian: Salor

Basque: Aran

Brazil: Ameixa-Comum, Ameixa-Européia, Ameixa-Preta, Ameixa-Roxa, Ameixa-Vermela

Bosnian: Šljiva

Chinese: Ou Zhou Li, Li Zi, Mei Zi

Croatian: Šljiva

Czech: Sliva

Danish: Blomme

Dutch: Pruim, Pruimenboom

Esperanto: Pruno

Eastonian: Aedploomipuu, Harilik Ploomipuu, Ploom, Ploomipuu

Finnish: Luumu, Luumupuu

French: Prunier, Prunier Commun, Prunier Domestique, Prunier Cultivé

German: Bauernp flaume, Echte Pflaume, Hausp flaume, Kultur-Pflaume, Pflaume, Pflaumenbaum, Zwetsche, Zwetschge, Zwispeln

Greek: Damáskino

Hebrew: Shazif

Hungarian: Kerti Szilva, Szilva

Icelandic: Plóma

Italian: Prugna, Pruno, Prugno, Susina, Susino

India: Alu Bukhara (Hindu), Arukam (Malayalam), Heikha (Manipuri), Alpagodapandu (Telugu), Aalu Bukhara (Urdu)

Indonesia: Plum

Japanese: Seiyou Sumomo, Seiyou Sumomo, Puramu, Yooroppa Sumomo

Latvian: Plūme

Malaysia: Plum

Nepalese: Aalu Bakharaa, Alu Bakhara

Persian: Aalu

Polish: Shliwa Domowa, Śliwa Domowa, Śliwka

Portuguese: Abrunheiro, Abrunheiro-Manso, Abrunho, Agruñeiro, Ameixa, Ameixeira, Ameixoeira

Vietnamese: (Quả) Mận, (Trái) Mận

West Frisian: Prom

Roman: Šljiva

Russian: Sliva Domašnaja

Scots: Ploum

Serbian: Šljiva

Slovakian: Bystrické Slivky, Slivka, Slivky

Slovenian: Češplja, Cheshplja, Sliva

Spanish: Ciruela, Ciruelo, Pruna, Prunero, Pruno

Swedish: Plommon

Geographical Distribution

P. domestica is a large crop in Europe and Southwest Asia. It is one of the most commercially important fruit trees in temperate countries. *P. domestica* is thought to have originated in the Caucasus Mountains near the Caspian Sea (Milošević and Milošević, 2018; Nakatani et al., 2000). Primitive cultivars are said to have first been discovered in Central Europe about 500 BC, perhaps by Celtic and Teutonic people. The fruit was thereafter exported by the Romans to the nations in Central Europe. High-quality cultivars are likely to have come from Southeast Europe after the Middle Ages and spread to the rest of Europe by the seventeenth century. Plum is currently grown around the world, primarily in Central, South, and Southeast Europe, as well as in North Africa, West Asia, India, North America, Australia, New Zealand, South Africa, and South America (Lim, 2012).

In India, *P. domestica* predominantly grows in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, and to some extent in the Nilgiris hill area. Plum grows on 4543 hectares in Jammu and Kashmir, with an annual yield of 8218 metric tons. It is abundantly grown in the Kashmir valley and is noted for its high quality and distinct flavour (Lalhal et al., 2017; Tamchos and Saroop, 2023).

Uses

P. domestica is used for both medicinal and edible purposes. Its medicinal uses are well reported in Ayurveda and other medication systems. Ripe plums are sweet and juicy. They can be consumed straight out of the fruit or used to make jams, preserves, pastries, plum dumplings, and other dishes. Prunes and prune juice have a long history of being used for their digestive and laxative properties. A brandy known as Slivovitz in Serbia, Tzuica in Romania, Palinka in Hungary, and Rakija in Albania, Bosnia, Croatia, and Serbia can be made by fermenting plum juice into plum wine. The Portuguese plums in syrup “Ameixa d'elvas” are historically renowned, as are plum puddings and sugar plums. It is worth noting that sugar plum was first used as a descriptor for any little, spherical candy or sweetmeat. They have been nicknamed sugar plums because they look and feel like plums, not because they contain plums (Lim, 2012; Topp et al., 2012).

The plum seed oil can be used as a substitute for almond oil (Mahmood et al., 2010). In addition to being a solid base for cosmetic products for dry and aging skin, plum seed oil may be exploited in culinary goods. It can aid skin affected by burns and can be easily applied to the skin without leaving any oily remains (Savic et al., 2020). The plum seed oil can also be used for biofuel production (Stierlin et al., 2018). The bark has febrifuge properties, and the root has an astringent effect. Leucorrhoea, piles, gonorrhoea, and an enlarged spleen can all be successfully treated with it (Mahmood et al., 2010).

According to many reports, *P. domestica* is used medicinally in conjunction with other drugs to treat conditions like leucorrhoea, irregular menstruation, postpartum debility, supressed immunity, and bad eyesight. It is also used in the prevention of asthma, arthritis, hypercholesterolemia, anaemia, Alzheimer disease, and cardiovascular diseases (Chopra et al., 2009; Parihaar et al., 2014; Shahidi et al., 2013).

Phyto-pharmacological Review

Stierlin et al., (2018) investigated the different biological activities of the leaves of *P. domestica*, which included the elastase, hyaluronidase, tyrosinase, lipoxygenase, and DPPH inhibitory activities. High performance liquid chromatography combined with mass spectrometry employing an electrospray ionization source (HPLC-ESI-

MS) was used to characterize the bioactive compounds. HPLC-ESI-MS analysis resulted in the tentative identification of neochlorogenic acid **(1)**, cryptochlorogenic acid **(2)**, quercetin-3-*O*-galactoside **(3)**, kaempferol-rutinoside **(4)**, quercetin-3-*O*-glucoside **(5)**, quercetin-pentoside **(6)**, kaempferol-pentoside-rhamnoside **(7)**, kaempferol-rhamnoside **(8)**, quercetin-rhamnoside **(9)**, isorhamnetin-3-*O*-rutinoside **(10)**, kaempferol-pentoside **(11)**, kaempferol-hexoside **(12)**, *p*-coumaroylquinic acid **(13)**, procyanidin B2 **(14)**, and cyanidin-pentoside **(15)**, while chlorogenic acid (**16)** and rutin **(17)** were properly identified.

Mocan et al., (2018) investigated the phenolic composition and biological activities of the leaves. The extraction was carried out using three different techniques: dispersive liquid-liquid microextraction (DLLME), sugaring out assisted liquid-liquid extraction (SULLE), and microwave-assisted extraction (MAE). The antioxidant, cytotoxic, and enzyme inhibitory activities were evaluated. The qualitative analysis was done using HPLC-PDA equipment, by which the phenolic pattern of the leaves of different plum cultivars was studied and revealed the presence of catechin **(1)**, chlorogenic acid **(2)**, epicatechin **(3)**, syringic acid **(4)**, 3-OH-4-MeO benzaldehyde **(5)**, rutin **(6)**, 2,3-diMeO benzoic acid **(7)**, benzoic acid **(8)**, *o*-coumaric acid **(9)**, and quercetin **(10)**.

El-Beltagi et al., (2019) carried out the phytochemical investigation on the plum fruit and measured the total polyphenols, flavonoids, tannins, alkaloids, and anthocyanins content by HPLC and spectrophotometric methods. Ethanolic and ethyl acetate extracts were screened for antioxidant activity (DPPH and reducing power methods), antibacterial activity against gram-positive (*S. aureus* and *B. cereus*) and gram-negative (*E. coli* and *S. tyhpimurium*) bacteria, antifungal activity against (*A. niger* and *C. albicans*), and cytotoxic activity using HepG2 cell lines from the liver, Caco-2 cell lines from the colorectal adenocarcinoma, and MCF-7 cell lines from the breast. The above study resulted in specific suppression of cancer cells, pathogenic microorganisms, and oxidation by the plum fruit, suggesting its potential as a functional food ingredient with added value. HPLC analysis revealed the presence of pyrogallol **(1)**, quinol **(2)**, gallic acid **(3)**, catechol **(4)**, *p*-hydroxy benzoic acid **(5)**, caffeine **(6)**, chlorogenic acid **(7)**, vanillic acid **(8)**, caffeic acid **(9)**, syringic acid **(10)**, vanillin **(11)**, *p*-coumaric acid **(12)**, ferulic acid **(13)**, benzoic acid **(14)**, rutin **(15)**, ellagic acid **(16)**, *o*-coumaric acid **(17)**, salicylic acid **(18)**, myricetin **(19)**, cinnamic acid **(20)**, quercetin **(21)**, rosmarinic acid **(22)**, naringenin **(23)**, and kaempferol **(24)** in two different cultivars.

Bi et al., (2019) extracted β-glucosidase enzyme from black plum seeds, carried out an assay of β-glucosidase activity, and investigated the influences of the IL (ionic liquid) on the primary and secondary structures of the enzyme. They also determined the effects of various parameters such as temperature (to identify the optimum temperature of the enzyme activity), pH, metal ions, and chemical reagents.

Bonesi et al., (2018) examined the potential use of essential oils extracted from the leaves of *P. domestica* by Clevenger-type equipment. The leaves were collected in June, July, and August. Gas chromatography coupled with a flame ionization detector and mass detector (GC-FID/MS) was used to identify the active phytoconstituents. The compounds found to be present in the essential oil from the leaves of *P. domestica* are α-pinene **(1)**, benzaldehyde **(2)**, β-pinene **(3)**, *p*-mentha-2,4(8)-diene **(4)**, trans-caryophyllene **(5)**, trans-β-farnesene **(5)**, γ-cadinene **(7)**, δ-cadinene **(8)**, tetradecanoic acid **(9)**, (Z)-phytol **(10)**, hexadecanoic acid **(11)**, tricosane **(12)**, tetracosane **(13)**, pentacosane **(14)**, heptacosane **(15),** nonacosane **(16)**, triacosane **(17)**, and

entriacosane **(18)**. In comparison to the positive control, ascorbic acid (IC50 = 1.70 ± 0.11 µg/mL), all oils showed extremely intriguing ABTS radical scavenging activity with IC50 values in the range (0.45 ± 0.07-0.50 ± 0.04 µg/ml). The essential oil from *P. domestica* leaves harvested in July had the lowest IC50 value of 73.78 ± 1.64 µg/ml in the DPPH test. Other IC50 values by the DPPH method ranged (88.33 ± 1.90-103.32 ± 3.26 µg/ml). The inhibitory activity of acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) was carried out to evaluate the possible neuroprotective action. The IC50 values of the AChE and BChE ranged (98.60 ± 2.20-171.80 ± 3.63 µg/ml) and (95.80 ± 1.60-209.70 ± 1.82 µg/ml), respectively.

Bose et al., (2017) carried out a study on the fruit of *P. domestica* for hepatitis C virus inhibitory activity. The screening test was run using Alexa-488-labelled HCV-LP (hepatitis C virus-like particles) to assess the inhibitory effect of the extract on the binding of HCV to Huh-7 cells. Cells were incubated with HCV-LP in the presence of extract (200 µg/ml), and flow cytometry was used to measure the amount of binding inhibition. The binding of HCV-LP to Huh-7 cells was 62% inhibited by the extract. Bose et al., (2017) also isolated rutin from plum fruit extract. Using LC-ESI-MS, NMR, and IR spectroscopic studies, the chemical structure of rutin was characterized and confirmed. Rutin dramatically reduced the binding of HCV-LP to hepatoma cells and the entrance of HCV (HCVcc) produced in cell culture. Rutin was found to be non-toxic to hepatoma cells, which is significant. Furthermore, rutin may directly affect the viral particle to prevent the early entrance stage of the HCV lifecycle. To sum up, rutin is a good candidate for the creation of anti-HCV therapies for the treatment of HCV infection.

Celik et al., (2017) used HPLC to analyze the contents of organic acids, phenolic compounds, and antioxidants in the fruits of *P. domestica*. The HPLC analysis revealed the presence of protocatechuic acid **(1)**, vanillic acid **(2)**, rutin **(3)**, gallic acid **(4)**, catechin **(5)**, chlorogenic acid **(6)**, caffeic acid **(7)**, syringic acid **(8)**, *p*-coumaric acid **(9)**, ferulic acid **(10)**, *o*-coumaric acid **(11)**, phloridzin **(12)**, citric acid **(13)**, mallic acid **(14)**, succinic acid **(15)**, fumaric acid **(16)**, and vitamin C **(17)**. Chlorogenic acid was the dominant compound.

Nayudu and Sowjanya, (2017) carried out in-vivo antidiabetic activity by the alloxan-induced antidiabetic activity method in rats. After receiving methanolic extract medication for 14 days, the diabetic rats showed a considerable reduction in blood glucose levels. Alloxan-treated rats experienced significant weight loss and changes in lipid and carbohydrate metabolism. The methanolic extract was also found to be beneficial in regulating blood lipids like cholesterol and triglycerides in diabetic rats.

The chemical qualities of a beverage must be determined in order to analyze its functional capabilities to generate favourable impacts on human health. Different varieties of plum wine (Čačanska rana, Čačanska lepotica, and Požegača) studied by Miljić et al., (2016) showed the presence of different amounts of ethanol, total sugar, pH, total acid, malic acid, citric acid, volatile acids, total phenols, methanol, glycerol, and some metals (mineral contents) such as Na, K, Ca, Mg, Fe, Zn, and Cu. The examined plum wines ranged in ethanol content (6.32-7.85% v/v), with the wine from the Požegača variety having the highest level. The wine from the Čačanska rana was found to have the highest total acid content (8.5 g/L), whereas the wine from Požegača had the lowest value of this criterion (6.7 g/L). The pH values of all plum wines fell within a tight range (3.4-3.5). Malic acid was the most prevalent acid in the plum wines studied (60-70%). In addition to malic acid, there was a significant quantity of citric acid (1-2 g/l). The wine from the Požegača had the highest content of

volatile acids (0.8 g/l). Total phenolic compounds were highest in the Čačanska lepotica (2.18 g/l). Citric acid was the highest in the Čačanska rana (2.0 g/l). Glycerol content ranged (6.2-4.6 g/l) and was the highest in Čačanska lepotica (6.2 g/l). Significant variations in the antibacterial activity of plum wines were not seen, except in the case of Čačanska rana, which had more prominent antibacterial activity against *P. aeruginosa*, *S. aureus*, and *B. cereus.* It has been found that *S. cerevisiae* and *C. albicans* fungi were more resistant to the action of the evaluated wine samples than bacteria. Based on the findings, it can be said that the total acids and pH levels had a significant impact on the antimicrobial activity of plum wines. The cytotoxic effect evaluated against three cancer cell lines (Hep2c, RD, and L2OB) showed that the Čačanska rana wine was the most powerful inhibitor of proliferation.

Lenchyk, (2015) extracted the plum leaves with 30% ethanol and performed the preliminary identification of the biologically active compounds using paper chromatography and thin-layer chromatography (PC and TLC). Two-dimensional PC technique was used to identify hydroxycinnamic acids in solvent systems: Ist direction-n-butanol-acetic acid-water (4:1:2), and IInd direction-15% acetic acid. The obtained chromatograms were treated with ammonia solution and azo coupling reagent. TLC was conducted for flavonoids in the solvent system glacial acetic acid-water-ethyl acetate (20:20:60). The obtained chromatograms were treated with a methanolic solution of amino ethyl ester of diphenyl boric acid, followed by a macrogol solution. The plate was then heated for 10 minutes at a temperature of 100-105 °C and examined in natural light. The content of phenolic compounds detected by HPLC was 5.29 ± 0.04%, with hydroxycinnamic acids accounting for 3.51 ± 0.03% and flavonoids accounting for 1.78 ± 0.02%.

Hooshmand et al., (2015) studied the anti-inflammatory and antioxidant activities of dried plum polyphenols in macrophage RAW 264.7 cells. HPLC coupled with a photodiode array detector (PAD) was used for the quantification of the phenolic content. The total phenolic content of dried plums extracted in ethanol was found to be 450.06 ± 16.55 GAEmg/100g. According to this study, dried plum polyphenols have shown the potent anti-inflammatory and antioxidant activities.

Najafabad and Jamei, (2014) determined the antioxidant activity of fresh and dried plums. Ethanolic and methanolic extracts of the plum were screened for their antioxidant activity. DPPH and NO assays showed that ethanolic and methanolic extracts of dried plums are more potent, while ethanolic and methanolic extracts of fresh plums were more susceptible to superoxide and peroxide radical scavenging. Additionally, it was seen that methanol performed the extraction process better than ethanol. This may be due to the more polar nature of methanol as a solvent.

Mehta et al., (2014) studied the antibacterial activity of the dried plums and found that it inhibited *P. mirabilis*, *S. aureus*, and *S. epidermis*. The diameter of one of the inhibition zones was the largest against *S. epidermis* (24 mm), indicating the highest activity, and the smallest against *S. aureus* (16 mm), indicating the lowest antibacterial activity. Antioxidant activity was evaluated by ABTS (IC50 = 8.8 mg/ml) and FRAP (0.784 mgBHTE/100 mg extract) methods. For quantitative metal detection, inductively coupled plasma-optical emission spectroscopy (ICP-OES) was employed. Mg, Ca, Fe, Zn, Cu, TI, Mn, Cr, Sn, Ni, Se, Ti, As, and Pb were examined and ranged (293.2-0.208 ppm), with the highest amount of Mg and the lowest amount of Pb.

Furfural, fatty acids, vitamin E, maltol, eugenol, and phytosterol were determined using the GC-MS screening technique.

Gum is a by-product produced by the metabolic system of plants. The gum is widely accessible, inexpensive, and used as an excipient in medicinal compositions. Natural gums derived from plants are used in drug administration as disintegrants, emulsifying agents, suspending agents, binders, and in the formulation of rapid and sustained release drugs. Rahim et al., (2014) investigated the binding potential of the gum of *P. domestica* and used polyvinylpyrrolidone PVP-K30 as a standard binder of the drug. According to the study, *P. domestica* showed a higher binding capacity than PVP-K30. As a result, *P. domestica* gum, a natural excipient, can be employed as a binder in tablet formulations.

Belhadj and Marzouki, (2014) studied the antioxidant activity (DPPH, reducing power, and chelating power methods), antibacterial activity (MTT assay and disc diffusion), and antihaemolytic activity of the plum and prune. According to the study, the methanolic extract of the plum has shown low antioxidant activity as compared to Trolox, but the methanolic extract of the prune has shown substantial antioxidant activity. It should be noted that the methanolic extract of the prune was more effective than the methanolic extract of the plum. The prune extract has a significant reducing power that may outperform the activity of several natural or synthetic conventional antioxidants, such as EDTA. At a concentration of 10 µg/ml, prune and plum extracts have an iron chelating action of 45.95 ± 1.05% and 10.82 ± 1.92%, respectively. The IC50 value of prune extract was computed and is predicted to be 19.00 ± 1.27 µg/ml. The methanolic extract of prune prepared in DMSO demonstrated a strong protective efficacy against erythrocyte haemolysis (31.35 ± 0.28%) at a dose of 400 µg/ml. The quantity of haemolysis decreased dose-dependently. The antibacterial activity of the methanolic extract prepared in DMSO (10, 50, and 100 µg/ml) was tested against *B. subtilis, Enterobacter, S. aureus, Klebsiella,* and *E. coli*. The prune extract has shown the better activity in comparison to the plum extract against all the microbes with the zone of inhibition ranging from 10 to 24 mm. The results of the MTT assays also revealed the prune to be a better candidate for antibacterial activity as compared to the plum. The prune extract inhibited *S. aureus* growth by 65.88 ± 1.23% at a concentration of 10 µg/ml. The best inhibitory activity of plum extract was observed against *E. coli* at a dose of 10 µg/ml with 40.56 ± 0.13% inhibition**.**

Shahidi et al., (2013) studied the effects of the hydroalcoholic extract of plum on the learning and memory of mice. A total of four groups (each consisting of seven mice) were studied. The control group of mice received saline, while the plum fruit extract-treated group received extracts (75, 100, and 150 mg/kg) for 7 days. A significant difference was found in the number of trials to acquisition between the groups. The results of the retention test indicated that administering 75 mg/kg and 100 mg/kg extracts led to an increased step-through latency (STLr) (compared with the untreated control group). The outcomes also demonstrated that the mice in the extract-treated groups spent less time in the dark compartment than did the mice in the control group. The results of the study indicated that the hydro-alcoholic extract of the plum enhances memory and learning in a passive avoidance task.

Amir et al., (2013) quantified the quercetin and rutin from the fruit of *P. domestica* using the high performance thin layer chromatography (HPTLC) technique. Ultrasonic assisted extraction (UAE) in a water and methanol mixture (1:1 v/v) of plum powder was performed. On the Camag TLC scanner III, densitometric scanning was

carried out in the absorbance mode at 297 nm. The mobile phase for the TLC development (5:4:0.5, v/v/v, toluene, ethyl acetate, and formic acid) produced dense, compact, and well-separated spots of quercetin and rutin as well as a sound peak at retention factor (Rf), which were determined to be 0.59 and 0.44 for quercetin and rutin, respectively.

Yaqeen et al., (2013) used a tail flick analgesiometer to test the analgesic effects of the ethanolic extract of *P. domestica* fruit at dosages of 300 mg/kg and 500 mg/kg in animal models. When the standard and control groups were compared, it was found that *P. domestica* extract at a dosage of 500 mg/kg had the highest and long-term analgesic action. Aspirin was used as the standard at a dosage of 300 mg/kg of body weight.

Kosar et al., (2012) isolated the prudomestisides A **(1)** and B **(2),** and three flavonoids 5,2'-dihydroxy-7,5'-dimethoxyflavanone **(3)**, 3,5,7-trihydroxy-6,4′-dimethoxyflavone **(4)**, and 5,4'-dihydroxyflavone 7-O-β-D-glucoside **(5)** from the shoots of *P. domestica*. The antioxidant activity of prudomestisides A and B was studied using the DPPH method. The IC50 values of prudomestisides A and B were found to be 20.4 ± 0.05 µM and 24.5 ± 0.03 µM, respectively. Isolation of the compounds was done using column chromatography and thin layer chromatography. Infrared spectroscopy (IR), electron impact mass spectroscopy (EIMS), and nuclear magnetic resonance spectroscopy (NMR, ^{1}H, and ^{13}C) techniques were used in the identification of the compounds**.**

Qaiser et al., (2012) studied the diuretic, angiotensin-converting enzyme (ACE) inhibitory, and blood pressure-lowering activities of the aqueous-methanolic crude extract of dried fruits of *P. domestica*. At doses ranging from 1 mg/kg to 30 mg/kg, the intravenous injection of crude extract reduced the mean arterial blood pressure (MABP), systolic blood pressure (SBP), and diastolic blood pressure (DBP) of the ketamine-diazepam-anesthetized normotensive rats in a dose-dependent manner. The ACE inhibitory activity of the extract showed an IC50 value of 1.102 mg/ml. Urine production did not significantly increase in the extract-treated rats. Traditional applications of prune as a cardioprotective and antihypertensive medicine are also justified by the findings of the study that its crude extract possesses hypotensive and ACE inhibitory actions.

Kristl et al., (2011) studied the contribution of extractable and non-extractable antioxidants to the total antioxidant activity (TAA). The antioxidant activity of the aqueous organic extract and the extraction residue, which underwent two separate acidic treatments to liberate hydrolysable tannins and non-extractable proanthocyanidins (NEPA), was assessed using the ABTS method. Although extractable antioxidants contributed less than 18% to the TAA, hydrolysable tannins and NEPA had significantly greater antioxidant activity levels, indicating that the antioxidant activity of plums may be understated in the literature. Furthermore, the variations in TAA during the penultimate week of ripening were also studied. The ripening process resulted in an increase in TAA up to 38% above the amount determined on the first sample day.

Yagmur and Taskın, (2011) studied the variation in the mineral content of the plum. The mineral composition of the source material, fruit after washing, and final product after heat treatment were all determined (canned fruit and syrup). The Fe, Cu, Zn, and Mn contents in unprocessed plums were determined to be (5.8389, 0.4510, 0.8630, and 0.5374 ppm) on average, respectively. These results were altered to (4.7032, 0.4080, 0.8119, and 0.4593 ppm) after washing. The canned plum (*P. domestica*) had levels of (2.6112, 0.3076, 0.6780, and 0.4033 ppm) mineral content.

Soni et al., (2011) investigated the hepatoprotective efficacy of methanol:ethanol (70:30) extract of *P. domestica* fruit against paracetamol and CCl_4-induced hepatitis in rats. Biochemical indicators of liver damage such as serum glutamate pyruvate transaminase (SGPT), serum glutamic oxaloacetic transaminase (SGOT), alkaline phosphatase (ALP), total bilirubin, direct bilirubin, tissue lactoperoxidase (LPO), reduced glutathione (GSH), catalase, and superoxide dismutase (SOD) were examined in both treated and untreated groups. Paracetamol (2 g/kg) and CCl_4 (1.5 ml/kg) improved SGPT, SGOT, ALP, total bilirubin, direct bilirubin, and GSH tissue levels. Treatment with *P. domestica* fruit extract at 150 mg/kg and 300 mg/kg restored the altered levels of biochemical markers to normal levels in a dose-dependent manner.

Mahmood et al., (2010) isolated the prunusins A and B, along with new C-alkylated flavonoids, from the seeds of *P. domestica*. The ethanol extract was suspended in water and fractionated in n-hexane, chloroform, ethyl acetate, and n-butanol successively in increasing order of polarity before being further extracted. Prunusins A **(1)** and B **(2)** have been obtained from the n-hexane soluble fraction by a series of chromatographic (column and thin layer chromatography) separations, and their structures were determined using ^{1}H-NMR, ^{13}C-NMR, DEPT, correlation spectroscopy (COESY), heteronuclear multiple quantum coherence (HMQC), and heteronuclear multiple bond correlation (HMBC) studies. Two known flavonoids, 3,5,7,4'-tetrahydroxyflavone **(3)** and 3,5,7-trihydroxy-8,4'-dimethoxyflavone **(4)**, were also isolated. Pathogens from humans, animals, and plants were used in the antifungal test. Compounds **(1)** and **(2)** were tested for antifungal activity along with standard drugs (each at a concentration of 400 µg/ml), against *A. niger, C. albicans, M. canis, T. mentagrophytes, F. solani,* and *T. simii* using the agar well dilution method. Prunusins A and B have shown the highest activity against *T. simii*, with 80.5% and 69.8% inhibition, respectively.

Kosar et al., (2009) isolated the purunusides A, B, and C, along with sitosterol and 6,7-methylenedioxy-8-methoxycoumarin, from the shoots of *P. domestica*. The ethanolic extract was fractionated with n-hexane, ethyl acetate, and butanol. The butanol soluble fraction was run in column ($CHCl_3$ and MeOH mobile phase) chromatography to give purunusides A **(1)**, B **(2)**, and C **(3)**. The ethyl acetate soluble fraction was further subjected to column chromatography to give sitosterol **(4)** (n-hexane and EtOH mobile phase) and 6,7-methylenedioxy-8-methoxycoumarin **(5)** (EtOH and MeOH mobile phase). Spectral investigations used to assign their structures were UV, IR, HRMS-FAB, EIMS, ^{1}H, and ^{13}C NMR. Purunusides A, B, and C showed a good α-glucosidase enzyme inhibitory activity with (IC50 = 216.6 ± 0.027, 268.4 ± 0.047 and 203.6 ± 1.700 µM), respectively.

Mahmood et al., (2009) carried out the phytochemical screening of three distinct oil fractions obtained from the n-hexane extract of *P. domestica* shoots. To obtain the oil fractions, the extract was subjected to column chromatography using the different ratios of n-hexane, n-hexane-benzene, and n-hexane-chloroform as mobile phases. Several fractions were produced: fraction-1 (2.3 g, a white solid mass eluted by 100% n-hexane), fraction-2 (3.5 g, a yellow viscous liquid eluted by n-hexane-benzene 3:1), and fraction-3 (7.1 g, a yellow oily liquid eluted by n-hexane-chloroform 4:1) were investigated using GC and GC-MS. It resulted in the identification of nine, sixteen, and twenty-four compounds, which accounted for 92.56, 90.60, and 90.69% of these oil fractions, respectively. The major compounds identified in fractions 1, 2, and 3 were hentricontane (35.7%), ethyl hexadecanoate (21.7%), and linoleic acid (16.16%), respectively. The bioassay screening of the

oil revealed high antioxidant activity by DPPH radical scavenging technique, moderate antifungal activity against *M. canis* by agar tube dilution method, and mild antibacterial activity against *Salmonella* group by agar well diffusion method.

Rop et al., (2009) measured the total phenolic content and total antioxidant activity of the different cultivars of *P. domestica* fruit. Total phenolic content was evaluated by the Folin-Ciocalteau method and antioxidant activity by the ABTS method. Svestka domaci showed the highest phenolic content (4.95 ± 0.11 mgGAE/gFM) and antioxidant activity (6.04 ± 0.21 mgAAE/gFM). Pectin content was also the highest in Svestka dumaci, with a typical value of 35.4 ± 1.7 g/KgFM. Furthermore, the minerals, including phosphorus, potassium, calcium, magnesium, and sodium, were also present in excellent amounts in various cultivars.

Radulović et al., (2009) extracted the flowers of *P. domestica* using the diethyl ether as solvent by maceration technique. The obtained extract was analyzed for the presence of volatile metabolites by the GC-MS technique. A total of 110 constituents were identified. Kaempferol (35.0%) was the main constituent in the *P. domestica* extract. A significant portion of the shikimate metabolites (51.7%) and other related odd-carbon alkanes (23.2%) were present in the *P. domestica* extract.

Bu et al., (2008) carried out the study to find out if the polyphenols in dried plums have any direct impacts on osteoclasts and their progenitors. To investigate the osteoclast precursors, osteoclast development, and osteoclast activity, RAW 264.7 macrophages were employed as models. Polyphenols isolated from dried plum (10, 20, and 30 µg/mL) decreased osteoclast precursor cyclooxygenase expression and nitric oxide (NO) by blocking inducible NO synthase under inflammatory conditions generated by lipopolysaccharide (LPS). The polyphenols inhibited NO and tumour necrosis factor (TNF)-α during osteoclastogenesis in the presence of the receptor activator NF-κB ligand (RANKL). With the time, there was a decline in the increased production of TNF-α in response to oxidative stress; however, there was no change in the production of LPS. As anticipated, LPS and H_2O_2 markedly elevated the quantity of tartrate-resistant acid phosphatase-positive cells by 127% and 30%, respectively. Under normal, inflammatory, and oxidative stress conditions, dried plum polyphenols reduced osteoclast differentiation, which coincided with the reduction of the nuclear factor for activated T cells (NFATc1). Primary bone marrow cultures validated these osteoclast-inhibiting actions. Resorption pit development was reduced to the same degree as osteoclast differentiation, indicating that dried plum polyphenols influence osteoclast differentiation rather than activity. The findings show that dried plum polyphenols directly suppress NFATc1 and inflammatory mediators, which results in a reduction in osteoclast activity.

Kikuzaki et al., (2004) isolated nine compounds related to abscisic acid and lignan from prunes (*P. domestica*) and evaluated the antioxidant activity by the oxygen radical absorbing capacity (ORAC) method. The extract was prepared in a 90% aqueous ethanolic solution. Which was further subjected to fractionation using hexane and water. The water-soluble fraction was separated by Diaion HP-20, Sephadex LH-20 gel, and ODS column chromatography using different mobile phases like H_2O/CH_3CN, EtOAc/MeOH/H_2O, and CH_2Cl_2/MeOH in different ratios. The identification of the isolated compounds was done using ^{1}H-NMR, ^{13}C-NMR, and HRMS-FAB. *rel*-5-(3*S*,8*S*-dihydroxy-1*R*,5*S*-dimethyl-7-oxa-6-oxobicyclo[3,2,1]-oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid **(1)**, *rel*-5-(3*S*,8*S*-dihydroxy-1*R*,5*S*-dimethyl-7-oxa-6-oxobicyclo[3,2,1]-oct-8-yl)-3-methyl-

2*Z*,4*E*-pentadienoic acid 3'-*O*-*β*-D-glucopyranoside **(2)**, *rel*-5-(1*R*,5*S*-dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxa-6-oxobicyclo-[3,2,1]oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid **(3)**, *rel*-5-(1*R*,5*S*-dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxabicyclo[3,2,1]-oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid **(4)**, (+)-abscisic acid **(5)**, (+)-*β*-D-glucopyranosyl abscisate **(6)**, (6*S*,9*R*)-roseoside **(7)**, (+) pinoresinol mono-*β*-D-glucopyranoside **(8)**, and 3-(*β*-D-glucopyranosyloxymethyl)-2-(4-hydroxy-3-methoxyphenyl)-5-(3-hydroxypropyl)-7-methoxy-(2*R*,3*S*)-dihydrobenzofuran **(9)**. The results of the ORAC assay are expressed in terms of Trolox equivalent, demonstrating that abscisic acid-related compounds (compounds 1 to 7) were slightly less active in comparison to lignan (compounds 8 and 9), with a range of 0.34-0.77 and 1.09-2.33 TE/µmol, respectively.

Kayano et al., (2004) isolated and identified the 10 compounds from the 90% ethanolic extract of the prune. For separation of bioactive compounds, fractionation, Sephadex LH-20 column chromatography (80% acetone), HPLC, Diaion HP-20 (H_2O-MeOH), and silica gel (ethyl acetate/MeOH/H_2O) column chromatography techniques were used. ^{1}H-NMR, ^{13}C-NMR, and HRMS-FAB analyses revealed the chemical structures of these isolated compounds to be 3-O-caffeoylquinic acid methyl ester **(1)**, 4-O-caffeoylquinic acid methyl ester **(2)**, caffeic acid methyl ester **(3)**, coniferin **(4)**, ferulic acid β-D-glucopyranoside **(5)**, scopoletin **(6)**, magnolioside **(7)**, vanillic acid **(8)**, benzyl β-primeveroside **(9)**, and 2-(5-hydroxymethyl-2',5,-dioxo-2',3',4',5'-tetrahydro-1'-H-1,3'-bipyrrole) carbaldehyde **(10)**. The antioxidant activity of the isolated compounds was measured by the ORAC method and ranged from 4.68 ± 0.05 to 0.08 ± 0.00 TE/µmol**.**

Kayano et al., (2003) performed a qualitative evaluation of the antioxidant components present in prunes. The prunes were extracted with 90% ethanol. The obtained extract was fractionated with hexane and water. The aqueous fraction was further subjected to Diaion HP-20 column chromatography using water and methanol (2, 5, 10, 20, 50, and 100%) as eluents. Both the H_2O and 50% MeOH eluates had high total phenolics and ORAC values; however, the contribution of caffeoylquinic acid isomers to the ORAC was modest. As a result, it was hypothesized that undiscovered antioxidants exist in these fractions, and several compounds are quantified by HPLC in this study. Furthermore, hydrolysis of EtOH extract residue resulted in increased amounts of total phenolics and ORAC, suggesting the presence of conjugated antioxidant components in prunes. 3-O-caffeoylquinic acid **(1)**, 4-O-caffeoylquinic acid **(2)**, 5-O-caffeoylquinic acid **(3)**, 5-hydroxymethylfurfural **(4)**, caffeic acid **(5)**, *p*-coumaric acid **(6)**, protocatechuic acid **(7)**, rutin **(8)**, (-)-epicatechin **(9)**, and 7-methocycoumarin **(10)** were the main identified constituents.

Tinker et al., (1994) conducted an in-vivo investigation to test the hypothesis that fibre derived from prunes decreases plasma and hepatic cholesterol in rats with diet-induced hyperlipidaemia, and the response is dosage-dependent when compared to pure cellulose. Five experimental diet groups were assigned to rats. Four of the diets contained cholesterol and cholic acid, which were designed to cause hyperlipidaemia. In diets designed for those with hyperlipidaemia, the source of fibre was either 6% cellulose, 3% prune fibre, 6% prune fibre, or 3% pectin. The fifth group (non-hyperlipidaemic control) was fed a meal containing 6% cellulose but no cholesterol or cholic acid. For 28 days, rats were fed one of five diets before being killed after 16 hours of fasting. Plasma, LDL, and hepatic cholesterol concentrations were greater in the hyperlipidaemic control group than in the non-hyperlipidaemic control group, but lower in the groups fed pectin or prune fibre diets than in the hyperlipidaemic control group. There was no difference in plasma or hepatic cholesterol concentrations

between groups fed either dose level prune fibre or between those provided 6% prune fibre and pectin. The findings suggest that fibre derived from prunes reduces plasma and hepatic cholesterol in hyperlipidaemic rats, although a dose dependent response was not obtained.

Parmar et al., (1992) isolated seven compounds from an alcohol extract of *P. domestica* heartwood. UV, ^{1}H, ^{13}C-NMR, IR, and EIMS techniques were used for the characterization. Isosakuranetin **(1)**, prudomestin **(2)**, 3,5,7-trihydroxy-6,4'-dimethoxyflavanone **(3)**, dihydrokaempferide **(4)**, 3,5,7-trihydroxy-8,4'-dimethoxyflavanone **(5)**, 5,7,4'-trihydroxy-3-methoxyflavanone **(6)**, and naringenin **(7)** were identified. Compound 5 was recovered for the first time from the *Prunus* genus. Compounds 3 and 6 are, on the other hand, novel natural products.

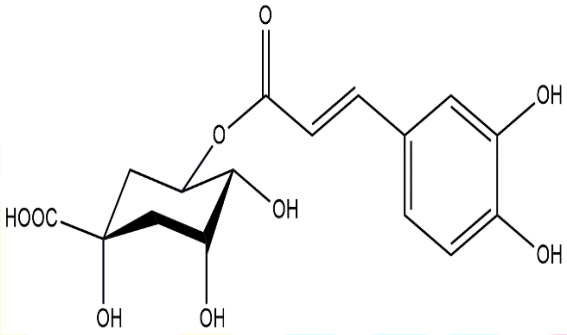
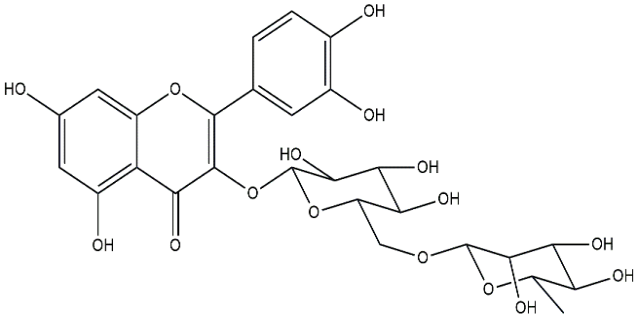
Nagarajan and Parmar, (1977) identified four compounds in the ether extract of the bark, namely 6-*O*-glucoside-phloracetophenone 4-methyl ether **(1)**, 4-O-methyl-phloracetophenone **(2)**, phloracetophenone **(3)**, and 5,7-dimethoxy-6-hydroxycoumarin **(4)**.

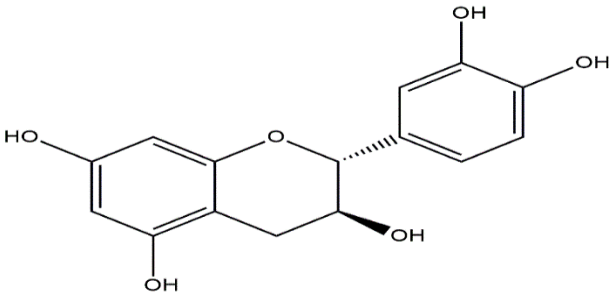
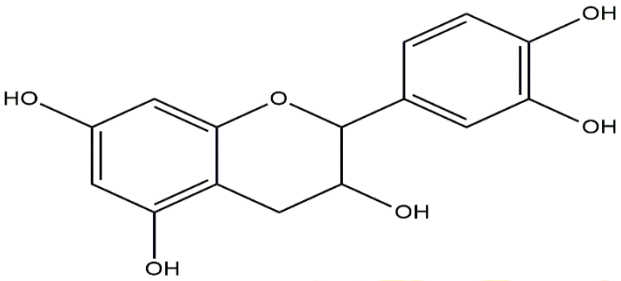
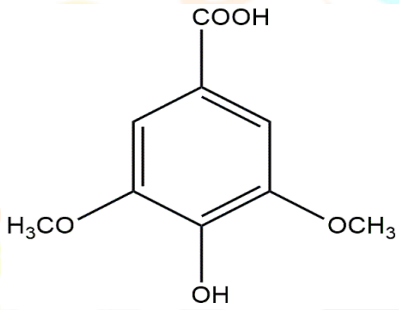
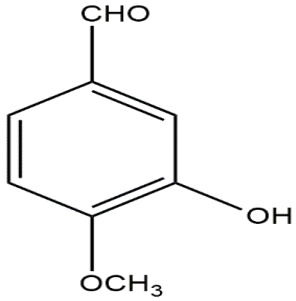
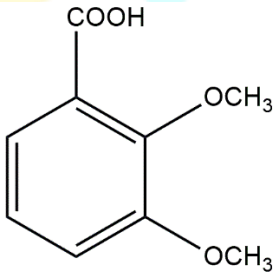
Nagarajan and Seshadri, (1964) isolated four flavonoids from the heartwood of *P. domestica*, namely 5,7-dihydroxy-4'-methoxy dihydroflavonol (**1**), 5,7-dihydroxy-8,4'-dimethoxyllavonol (**2**), kaempferol (**3**), and leucoanthocyanidin **(4)**.

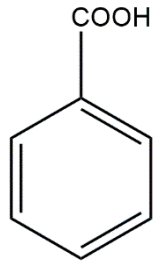
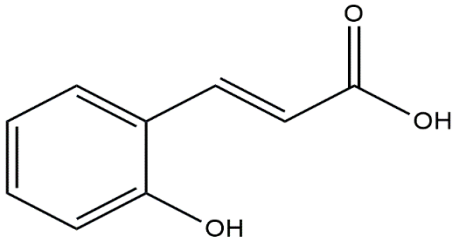
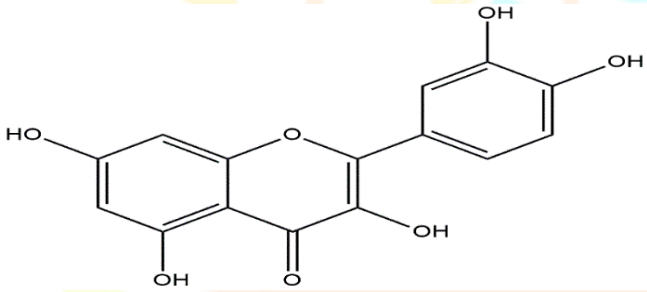
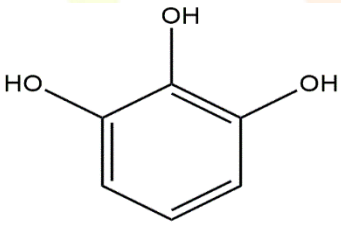
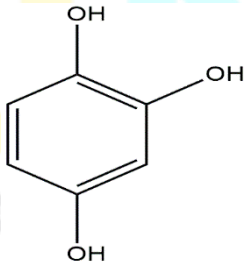
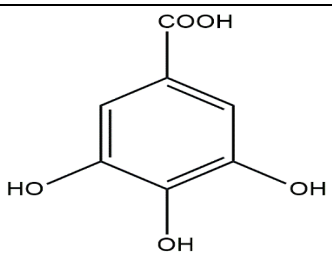
Important Phytochemicals

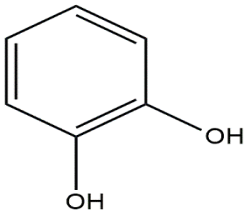
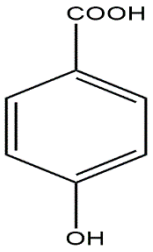
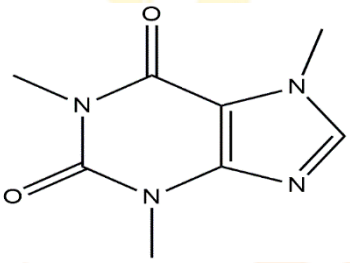
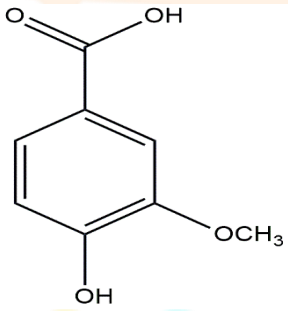
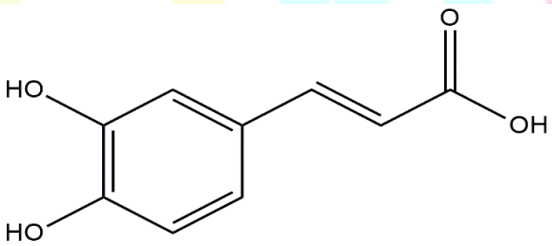
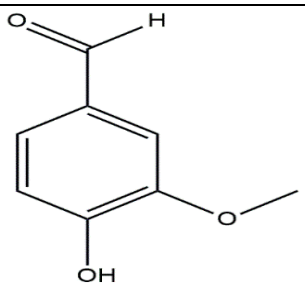
Previously reported important phytochemicals in *P. domestica* are tabulated in the Table 2.

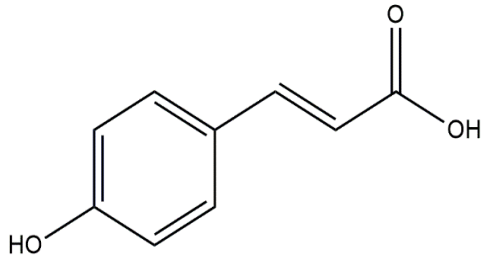
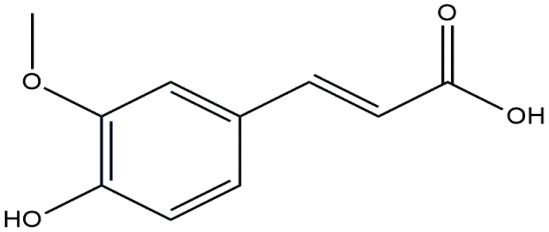
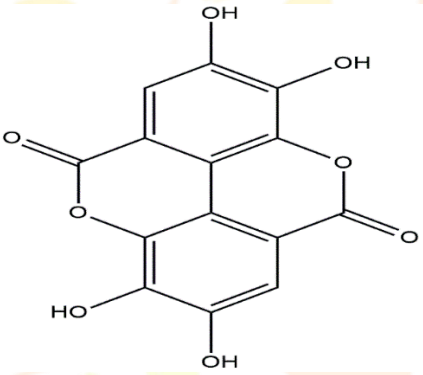
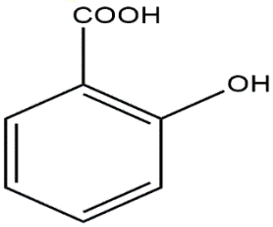
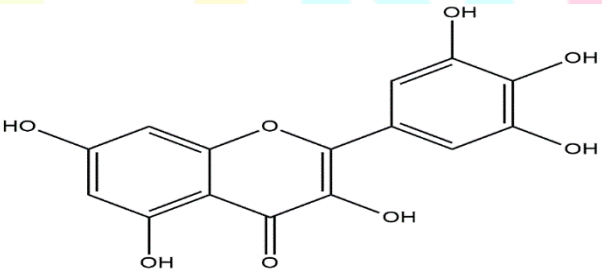
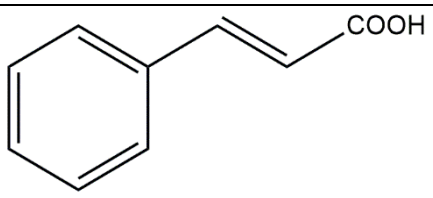
Table 2: Some previously reported phytochemicals in *P. domestica*

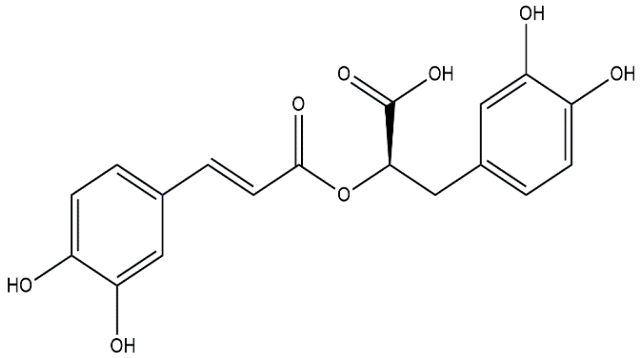
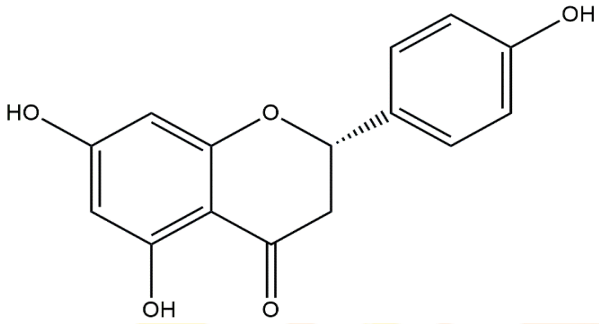
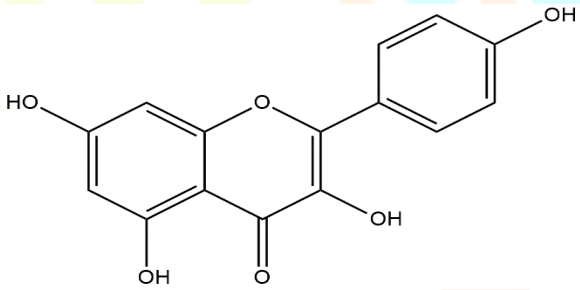
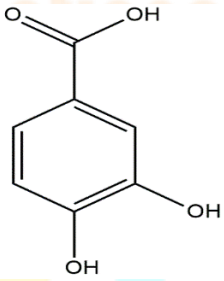
Plant part	Structure and name	Reference
Leaves and fruits	 **Chlorogenic acid or (5-O-caffeoylquinic acid)**	Celik et al., (2017); El-Beltagi et al., (2019); Kayano et al., (2003); Mocan et al., (2018); Stierlin et al., (2018)
Leaves, fruits, and prunes	 **Rutin**	Celik et al., (2017); El-Beltagi et al., (2019); Kayano et al., (2003); Stierlin et al., (2018)

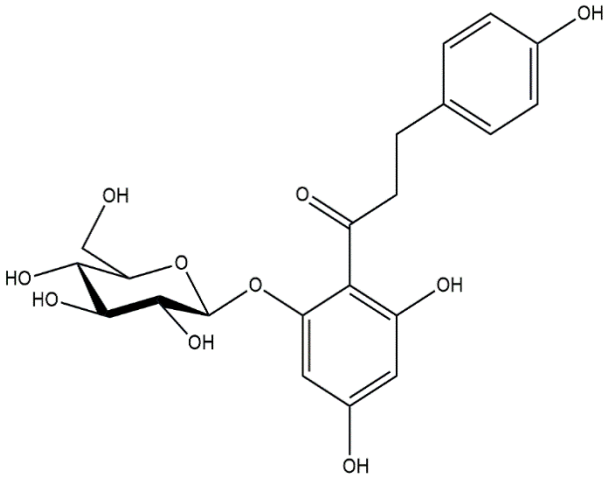
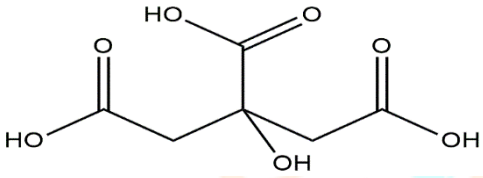
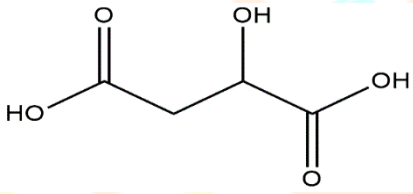
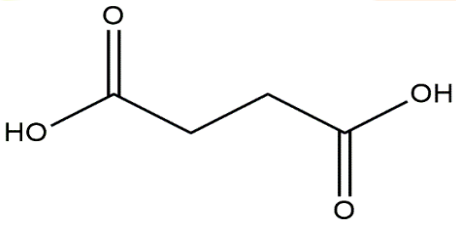
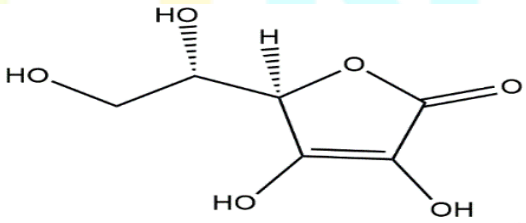
Leaves and fruits	 **Catechin**	Celik et al., (2017); Mocan et al., (2018)
Leaves	 **Epicatechin**	Kayano et al., (2003); Mocan et al., (2018)
Leaves and fruits	 **Syringic acid**	Celik et al., (2017); El-Beltagi et al., (2019); Mocan et al., (2018)
Leaves	 **3-OH-4-MeO benzaldehyde**	Mocan et al., (2018)
Leaves	 **2,3-diMeO benzoic acid**	Mocan et al., (2018)

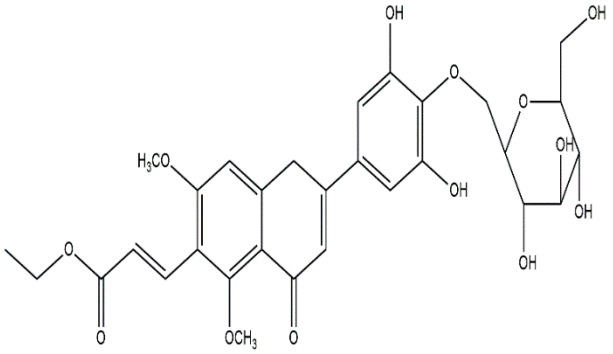
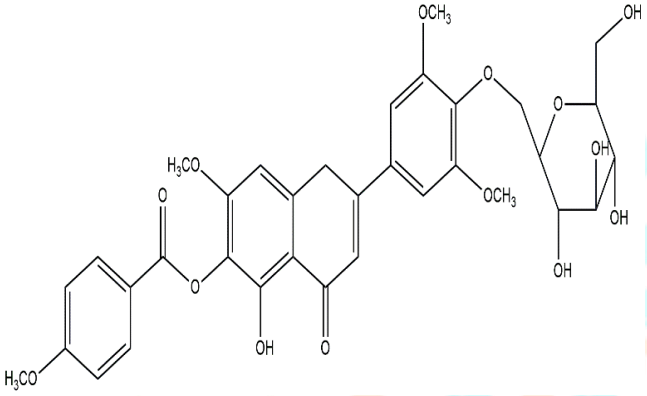
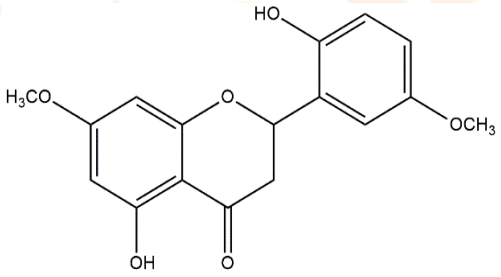
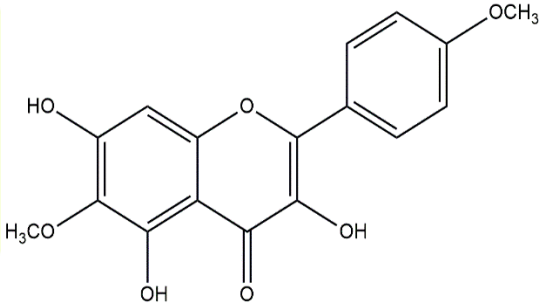
Leaves and fruits	 **Benzoic acid**	El-Beltagi et al., (2019); Mocan et al., (2018)
Leaves and fruits	 ***o*-coumaric acid**	Celik et al., (2017); El-Beltagi et al., (2019); Mocan et al., (2018)
Leaves and fruits	 **Quercetin**	El-Beltagi et al., (2019); Mocan et al., (2018)
Fruits	 **Pyrogallol**	El-Beltagi et al., (2019)
Fruits	 **Quinol**	El-Beltagi et al., (2019)
Fruits	 **Gallic acid**	Celik et al., (2017); El-Beltagi et al., (2019)

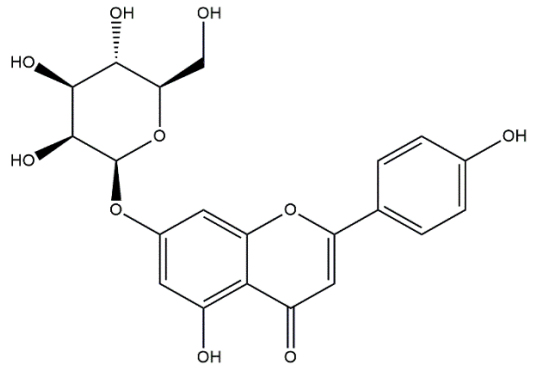
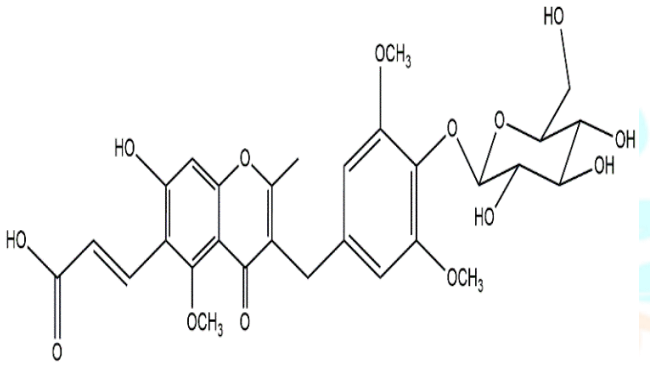
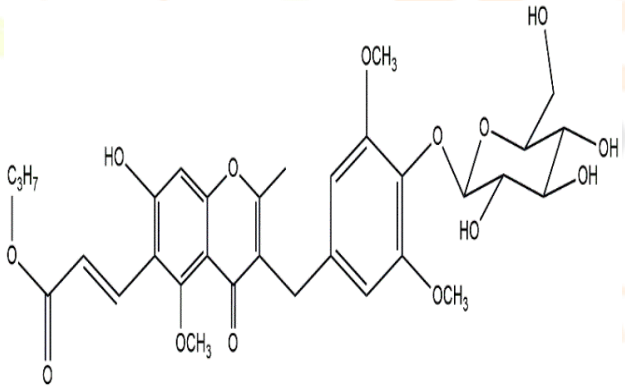
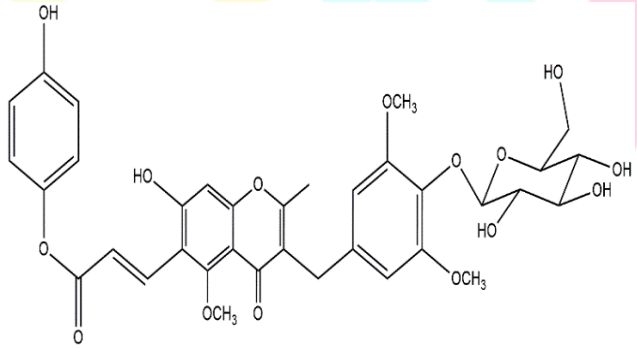
Fruits	 **Catechol**	El-Beltagi et al., (2019)
Fruits	 ***p*-Hydroxy benzoic acid**	El-Beltagi et al., (2019)
Fruits	 **Caffeine**	El-Beltagi et al., (2019)
Fruits and prunes	 **Vanillic acid**	Celik et al., (2017); El-Beltagi et al., (2019); Kayano et al., (2004)
Fruits and prunes	 **Caffeic acid**	Celik et al., (2017); El-Beltagi et al., (2019); Kayano et al., (2003)
Fruits	 **Vanillin**	El-Beltagi et al., (2019)

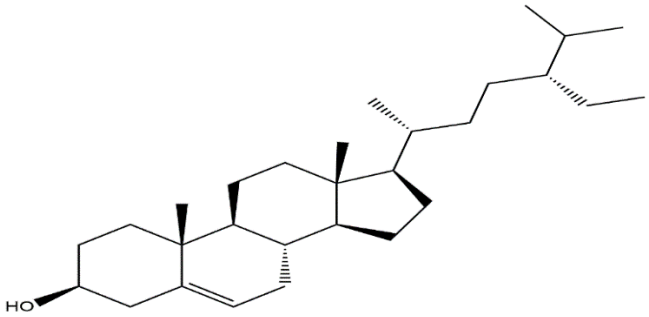
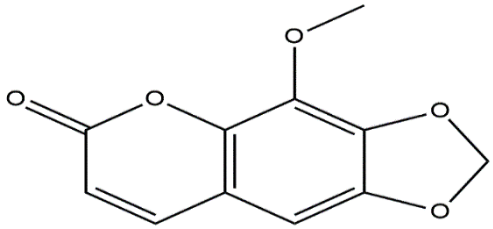
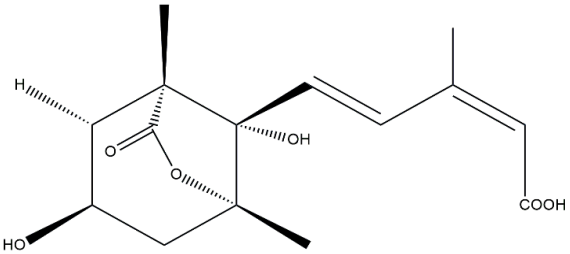
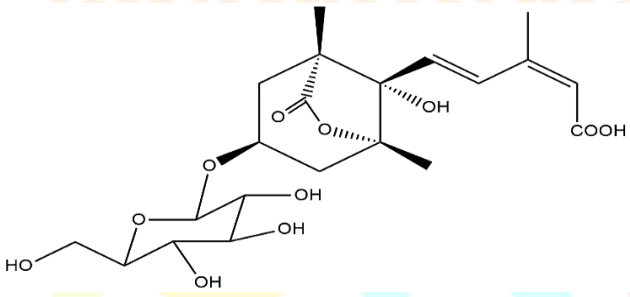
Fruits and prunes	 **_p_-coumaric acid**	Celik et al., (2017); El-Beltagi et al., (2019); Kayano et al., (2003)
Fruits	 **Ferulic acid**	Celik et al., (2017); El-Beltagi et al., (2019)
Fruits	 **Ellagic acid**	El-Beltagi et al., (2019)
Fruits	 **Salicylic acid**	El-Beltagi et al., (2019)
Fruits	 **Myricetin**	El-Beltagi et al., (2019)
Fruits	 **Cinnamic acid**	El-Beltagi et al., (2019)

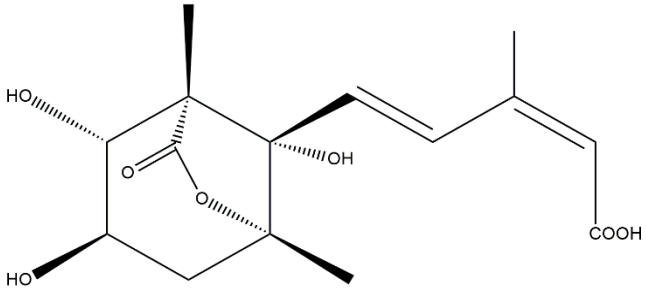
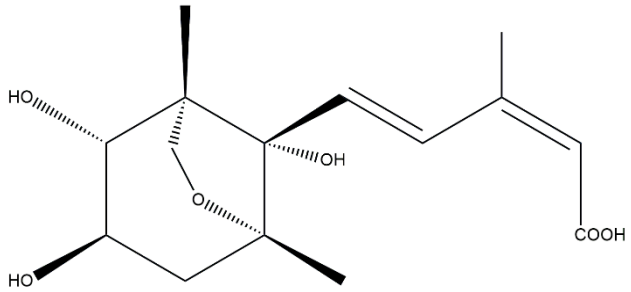
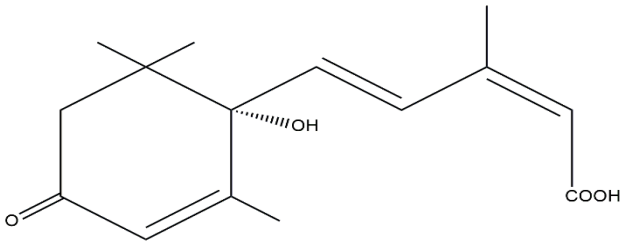
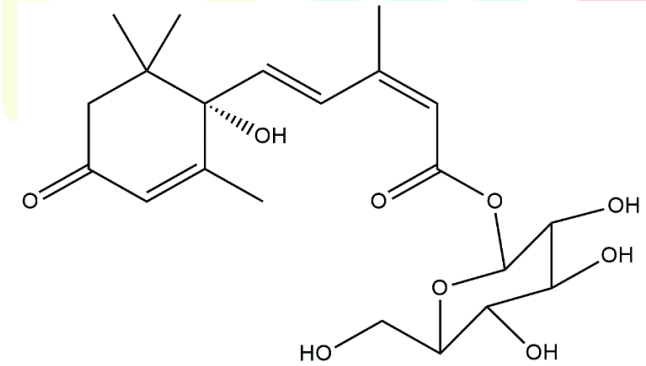
Fruits	 **Rosmarinic acid**	El-Beltagi et al., (2019)
Fruits	 **Naringenin**	El-Beltagi et al., (2019)
Fruits and heartwood	 **Kaempferol**	El-Beltagi et al., (2019); Nagarajan and Seshadri, (1964)
Fruits and prunes	 **Protocatechuic acid**	Celik et al., (2017); Kayano et al., (2003)

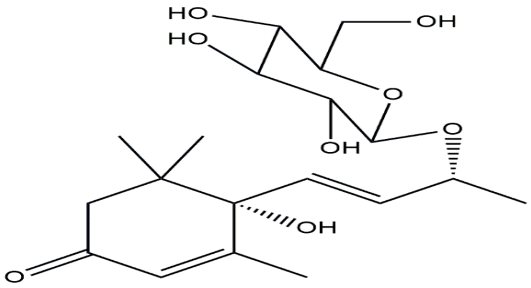
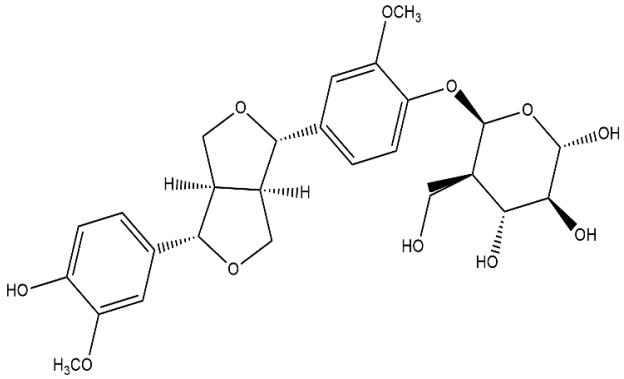
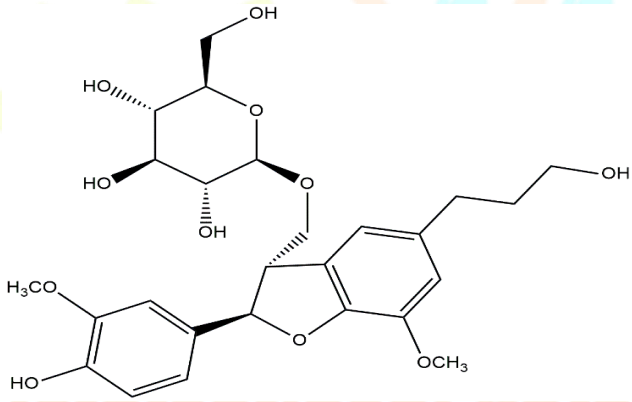
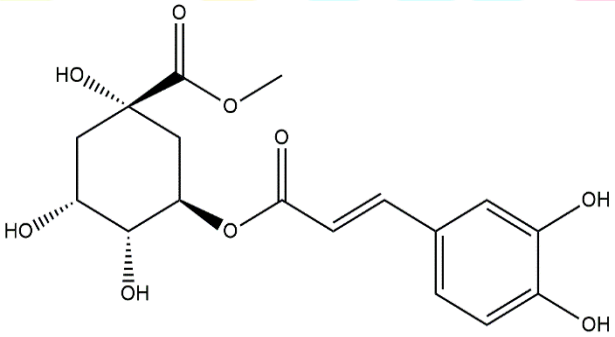
Fruits	 **Phloridzin**	Celik et al., (2017)
Fruits	 **Citric acid**	Celik et al., (2017)
Fruits	 **Mallic acid**	Celik et al., (2017)
Fruits	 **Succinic acid**	Celik et al., (2017)
Fruits	 **Ascorbic acid (Vitamin C)**	Celik et al., (2017)

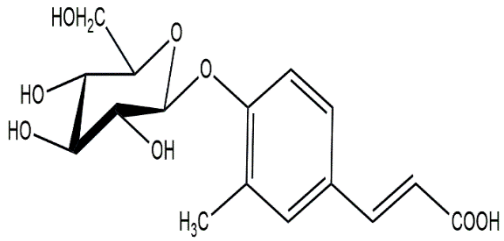
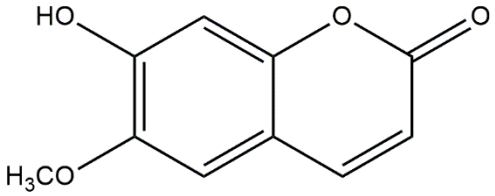
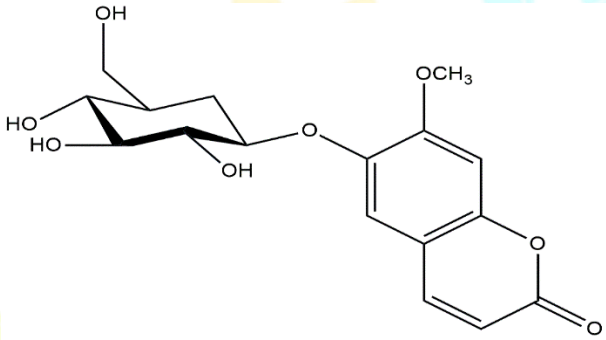
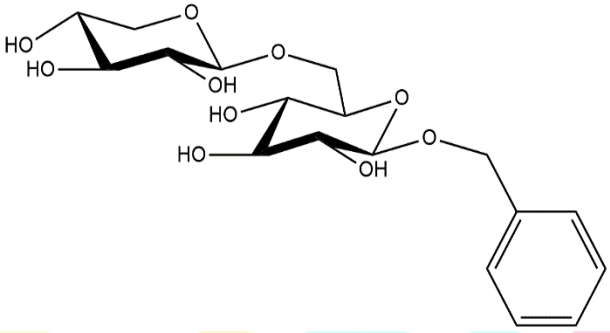
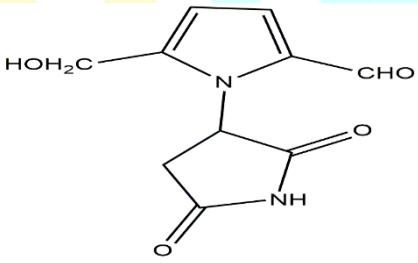
Shoots	 **Prudomestiside A**	Kosar et al., (2012)
Shoots	 **Prudomestiside B**	Kosar et al., (2012)
Shoots	 **5,2'-dihydroxy-7,5'-dimethoxyflavanone**	Kosar et al., (2012)
Shoots	 **3,5,7-trihydroxy-6,4´-dimethoxyflavone**	Kosar et al., (2012)

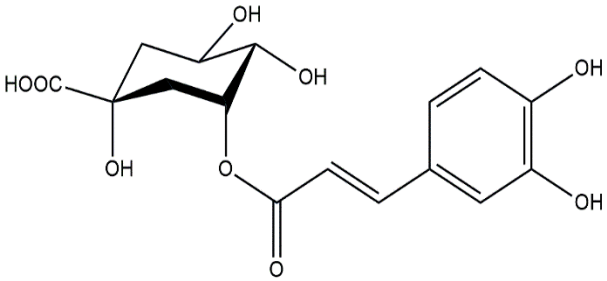
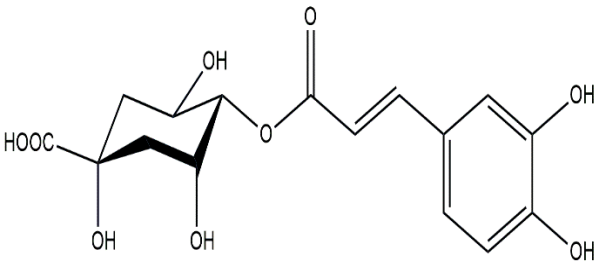
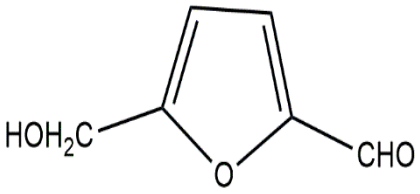
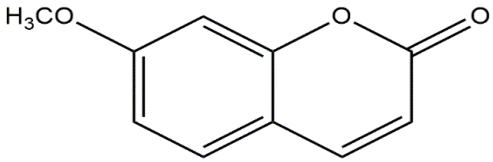
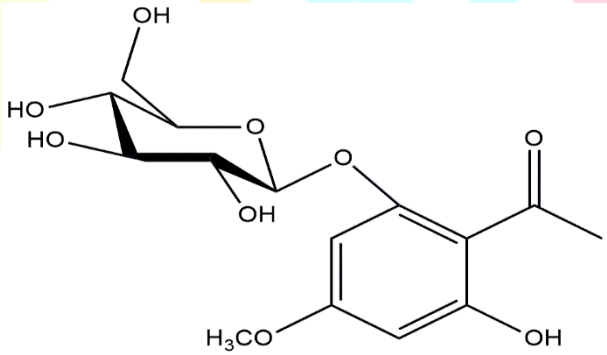
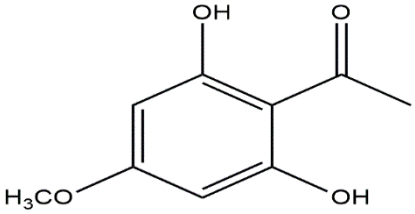
Shoots	 **5,4´-dihydroxyflavone 7-O-β-D-glucoside**	Kosar et al., (2012)
Shoots	 **Prunuside A**	Kosar et al., (2009)
Shoots	 **Prunuside B**	Kosar et al., (2009)
Shoots	 **Prunuside C**	Kosar et al., (2009)

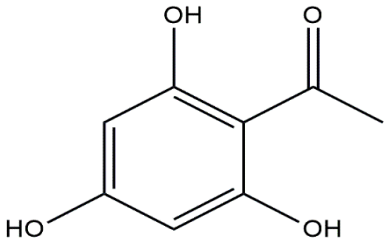
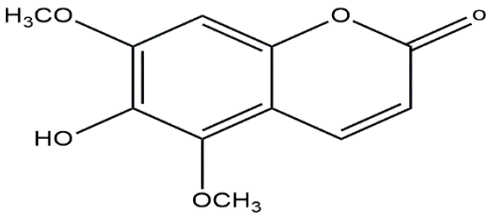
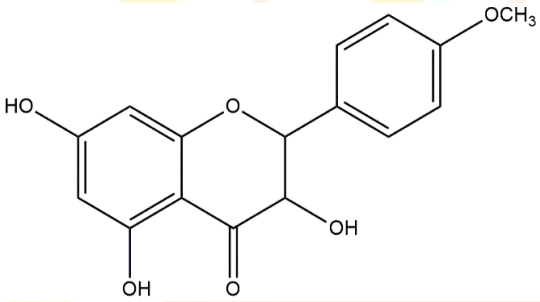
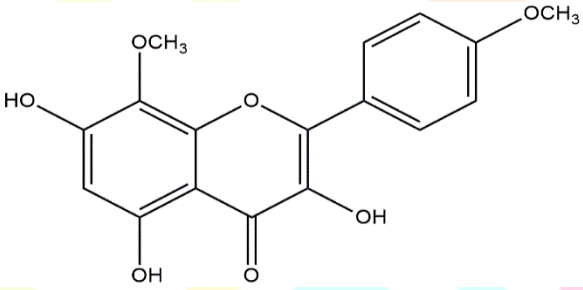
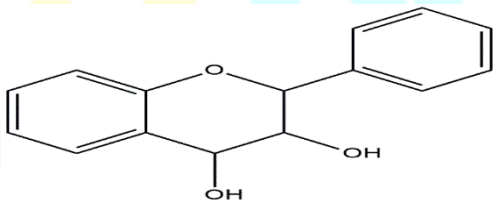
Shoots	 **Sitosterol**	Kosar et al., (2009)
Shoots	 **6,7-methylenedioxy-8-methoxycoumarin**	Kosar et al., (2009)
Prunes	 ***rel*-5-(3*S*,8*S*-Dihydroxy-1*R*,5*S*-dimethyl-7-oxa-6-oxobicyclo[3,2,1]-oct-8-yl)-3-methyl- 2*Z*,4*E*-pentadienoic acid**	Kikuzaki et al., (2004)
Prunes	 ***rel*-5-(3*S*,8*S*-Dihydroxy-1*R*,5*S*-dimethyl-7-oxa-6-oxobicyclo[3,2,1]-oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid 3'-*O*-*β*-D-glucopyranoside**	Kikuzaki et al., (2004)

Prunes	 ***rel*-5-(1*R*,5*S*-Dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxa-6-oxobicyclo- [3,2,1]oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid**	Kikuzaki et al., (2004)
Prunes	 ***rel*-5-(1*R*,5*S*-Dimethyl-3*R*,4*R*,8*S*-trihydroxy-7-oxabicyclo[3,2,1]-oct-8-yl)-3-methyl-2*Z*,4*E*-pentadienoic acid**	Kikuzaki et al., (2004)
Prunes	 **(+)-Abscisic Acid**	Kikuzaki et al., (2004)
Prunes	 **(+)-*β*-D-Glucopyranosyl Abscisate**	Kikuzaki et al., (2004)

Prunes	 **(6*S*,9*R*)-Roseoside**	Kikuzaki et al., (2004)
Prunes	 **(+) Pinoresinol Mono-*β*-D-glucopyranoside**	Kikuzaki et al., (2004)
Prunes	 **3-(*β*-D-Glucopyranosyloxymethyl)-2-(4-hydroxy-3-methoxyphenyl)-5-(3- hydroxypropyl)-7-methoxy-(2*R*,3*S*)-dihydrobenzofuran**	Kikuzaki et al., (2004)
Prunes	 **3-O-caffeoylquinic acid methyl ester**	Kayano et al., (2004)

Prunes	 **Ferulic acid β-D-glucopyranoside**	Kayano et al., (2004)
Prunes	 **Scopoletin**	Kayano et al., (2004)
Prunes	 **Magnolioside**	Kayano et al., (2004)
Prunes	 **Benzyl β-primeveroside**	Kayano et al., (2004)
Prunes	 **2-(5-hydroxymethyl-2',5'-dioxo-2',3',4',5'-tetrahydro-1'H-1,3'-bipyrrole) carbaldehyde**	Kayano et al., (2004)

Prunes	 **3-O-caffeoylquinic acid or** **(Neochlorogenic acid)**	Kayano et al., (2003)
Prunes	 **4-O-caffeoylquinic acid or** **(Cryptochlorogenic acid)**	Kayano et al., (2003)
Prunes	 **5-hydroxymethylfurfural**	Kayano et al., (2003)
Prunes	 **7-methocycoumarin**	Kayano et al., (2003)
Bark	 **6-*O*-glucoside-phloracetophenone 4-methyl ether**	Nagarajan and Parmar (1977)
Bark		Nagarajan and Parmar (1977)

	4-O-methyl-phloracetophenone	
Bark	 **Phloracetophenone**	Nagarajan and Parmar (1977)
Bark	 **5,7-dimethoxy-6-hydroxycoumarin**	Nagarajan and Parmar (1977)
Heartwood	 **5,7-dihydroxy-4'-methoxy dihydroflavonol**	Nagarajan and Seshadri, (1964)
Heartwood	 **5,7-dihydroxy-8,4'-dimethoxyflavonol**	Nagarajan and Seshadri, (1964)
Heartwood	 **Leucoanthocyanidin**	Nagarajan and Seshadri, (1964)

CONCLUSION

Despite advances in contemporary medications and significant breakthroughs in synthetic drugs, a huge proportion of the world population still relies on plant-based herbal treatments. Medicinal plants play an

important role in the treatment of a wide range of illnesses. This comprehensive study sheds insight on the botanical description, culinary applications, categorization, vernacular names, provenance, distribution, and phytopharmacological properties of *P. domestica*. It is obvious that *P. domestica* possesses a wide range of pharmacological properties, making it a good therapeutic agent. This review has also shed light on the phytochemicals isolated from the multiple parts of the *P. domestica* plant. The rising interest in plum research can be linked to its diverse phytonutrient profile, which includes phenolic content, anthocyanins, flavonoids, and so on. This suggests that in the next few years, this plant might serve as a model for the creation of a new medicine for specific illnesses and be effective in the treatment of a variety of maladies.

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