



Medicinal Properties of Bandicoot Berry *Leea Indica*: A Reviews

DHUHA SABAH NADIR¹ and ENAS JASIM AL- ZUBADI²

¹Al-Fadhilat Preparatory School for Girls /Baladrus Department of Education/ Diyala General Directorate of Education- Iraq

²Al-Shamoukh Secondary School / Baquba Department of Education/ Diyala General Directorate of Education – Iraq

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ABSTRACT

The bandicoot berry (*Leea Indica*) plant is one of the most medicinal plants rich in antioxidants, including phenols, flavonoids, terpenes, and many effective compounds with antioxidant activity, which treat many diseases, such as cancer, arthritis, skin ulcers, sexual disorders, influenza, fever, vomiting, and allergies. *L. Indica* has a role in regulating blood sugar and fat levels. It was found that the effectiveness of alcoholic extracts of bandicoot leaves has a role in inhibiting the growth of cancer cells, including prostate cancer. It was found that the extracts of the bandicoot, the ability to act as an antioxidant and modulate the levels of liver enzymes and various functions, preferring other inflammations by regulating pro-inflammatory saccharides, which leads to reducing various effects in the body.

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Corresponding Author:

Dhuha Sabah Nadir

Al-Fadhilat Preparatory School for Girls /Baladrus Department of Education ,
Diyala General Directorate of Education-Iraq

Email: : dhuha.s.nader@gmail.com



1. INTRODUCTION

Medicinal plants are considered to have medicinal properties because they contain active ingredients with preventive and therapeutic effects, which makes them an effective alternative in treatment against many diseases. [1]. It has been found that medicinal plants contain many effective therapeutic compounds. The World Health Organization has confirmed that 80% of the world's population using medicinal plants to treat many diseases that affect the body, including bacterial, fungal and viral diseases, as well as chronic diseases autoimmune diseases. Alzheimer's and cancer diseases [2,3]. The bandicoot berry plant *L. indica* is one of the most medicinal plants rich in antioxidants, including phenols, flavonoids, terpenes, and many effective compounds with antioxidant activity, which have an essential role in treating many diseases, especially cancer, arthritis, skin ulcers, eczema, wounds, sexual disorders, tetanus, typhoid. Fever, diabetes, allergies, and other diseases [4,5]. In addition, bandicoot berries are among the plants that are effective in suppressing the growth of cancer cells through their ability to stimulate the programmed cell death pathway. Many previous studies have also shown the role of this plant in regulating blood sugar and fat levels [4]. Scientific classification of plants:

Common name: - Bandicoot berry [4]
English name: - bandicoot berry
Scientific name: - *Leea indica*
Kingdom: plantae
Division: Magnoliophyta
Class: Eudicots
Order: vitals
Family: leeaceae
Genus: *Leea*
Species: *indica*

The bandicoot berry as shown in Figure 1 is one of the trees found in India, China, Malaysia, the Malay Peninsula in Thailand, and the island of Sumatra in Indonesia. The length of the leaves of this plant ranges from 9 - 12 cm and is different in shape and size [6]. It has strong wooden stems and its flowers are white. Green with large, three-branched thorns raised on short stems [7]. The fruits are black and purple in color and contain about six seeds with a diameter of approximately 1 cm [8]. This plant belongs to the vine family, leaceae which includes more 70 species, *indica* widely distributed throughout northern Australia, Southeast Asia and parts of Africa. These species are *L. rubra*, *L. asiatica*, *L. aequata* and *macrophylla guineensis* [4].



Figure 1. Shows the parts of the plant: the fruit (A), the flowers (B), the auricles (C) [9].

The important of Bandicoot Berries (*L. Indica*)

The bandicoot plant has many functions, if it is used to treat joint pain [6, 10], and treatment of cancer and diabetes [4]. Also has an antioxidant property [9]. The leaves of this plant contain palmitic acid, hydrocarbons, gallic acid, phytosterols, triterpenes, flavonoids, oxylipins, [7,11] alkaloids and saponins [12].

Antioxidant properties of Bandicoot Berries

Antioxidants are biologically important in protecting cells of the body from oxidative stress [4]. Antioxidants compounds work directly or indirectly to eliminate reactive oxygen species and control the production of reactive oxygen species. Phenolic compounds, flavonoids, alkaloids, and non-protein amino acids work in concert with antioxidant enzymes such as superoxide dismutase and catalase to reduce the production of reactive oxygen species [13].

Many studies have confirmed that using alcoholic extract of bandicoot berry leaves possesses antioxidant activity, as its efficiency in scavenging free radicals has been proven. This is attributed to its containment of terpenoids, sterols, saponins and many other effective compounds [9].

Phenolic compounds possess antioxidant activity due to their redox properties that allow them to act as reducing agents or hydrogen donors [14]. In general, several studies have found that bandicoot berries possess hepatoprotective activity by alleviating damage caused by oxidative stress. an ethanolic extract of the stem of bandicoot berries has shown a protective starch against paracetamol-induced hepatotoxicity in vivo and significantly reduces elevated levels of paracetamol enzymes. Liver in serum bilirubin and triglycerides and thus are responsible for the protective effect of the liver [15].

Anticancer properties of Bandicoot Berries

Cancer is defined as a rapid, uncontrolled division that occurs very quickly in living cells through an increasing the ability to divide. Cancer develops when the body loses control over cell division naturally, which leads to the transformation of normal cells into cancer cells [4]. Anti-cancer activity is crucial for protecting the body from various diseases and preserving life. An anti-cancer agent can be a natural or synthetic substance, or a chemical that can reverse, suppress or prevent the progression of cancer-causing cells. More than 80% of anti-cancer drugs are derived from plants. Such as alpha-mollic acid α -L-arabino-side and beta-mollic acid β -D-xyloside found in *L. indica* leaves, which have an inhibitory effect on many cancer cells, including cervical cancer [11].

The effectiveness of the methanolic, ethanolic, and aqueous extracts of *L. indica* leaves has also been proven to inhibit the growth of cancer cells against two types of prostate cancer lines (145-DU and 3-PC). A study [16] reported that the methanolic extract of *L. indica* leaves Starch has an anti-tumor effect against Ehrlich Ascites Carcinoma cell type in albino mice. The results showed that subperitoneal injection of the extract at a dose of 40 mg/kg showed maximum anti-tumor activity with a percentage of 77.29% inhibition of cancer cell growth. A decrease in tumor weight was also observed. An increase in the life span of cells [16]. Thus, this plant is effective against several types of cancers [4]. Many active compounds, such as phenols, polyphenols, and flavonoids, work with antioxidant activity and scavenge free radicals formed in cells, tissues and organs, which is one of the main causes that lead to the development of cancer, as it is believed that reactive oxygen

species (ROS) play an important role in many diseases. Which infect humans, the most important of which is cancer [17]. Bandicoot berry extract (*L. indica*) has also been used against many cancer cell lines, including breast cancer cell lines and cervical cancer cells, and it has also been noted that it has a role in inducing apoptosis [11].

One study confirmed the antimitotic activity of bandicoot berry leaves on twelve human cancer cell lines obtained from breast (231-MDA-MB, T47D) and cervix. (C33A), colon (HCT116), leukemia (U937), liver (SK-OV-3, PA-1, OVCAR-5), ovary (SNU-449, SNU-182, HepG2) and uterus (MES-SA/DX5). All alcoholic and aqueous bandicoot berry leaf extracts showed the plant be antiproliferative against all cell lines tested. It showed very high effectiveness against cancer cells of the cervix, liver, and ovary -1 [18].

The role of Bandicoot Berries on liver enzyme

Many studies have confirmed the role of bandicoot berry leaves in regulating the activity of liver enzymes by working to raise antioxidant enzymes in the body to a large extent. Due to the high percentage of active substances. Antioxidants that work to remove toxins present in the body and maintain the performance of the normal functions of the liver cells in the body, in addition to the fact that maintaining the levels of normal liver enzymes in the serum indicates its role in maintaining the structural structure of the liver cells or the membranes of these cells and repairing damage in some. Hepatocytes are exposed to many toxins [19]. It has been found that the use of bandicoot berry extract contains compounds such as alkaloids, lignin, saponins, sterols and anthraquinones, which have liver-protective activity [12]. The role of treatment with aqueous extract of bandicoot leaves may play a role in regenerating liver cells and reducing the level of bilirubin. [4,20], as controlling bilirubin levels after using the extract indicates improvement Early in the secretion mechanism of liver cells, as the effectiveness of any liver protective drug depends on its ability to either Reducing the harmful effect or restoring normal liver functions [21].

The role of Bandicoot Berries on kidney function

The antioxidant properties of the bandicoot berry plant, works to get rid of the roots Free radicals, oxidative stress, repair of kidney damage, and resulting injury to the kidneys as a result of exposure to chemicals. It has also been proven that polyphenols and flavonoids in the *L. indica* plant reduce levels of Uric acid, creatinine and urea by acting as antioxidants and reducing free radicals and inhibiting many oxidation enzymes, including xanthine oxidase and other enzymes. [22, 23].

Bandicoot Berries and anti-inflammatory

Bandicoot berry leaves contain many different active compounds with anti-inflammatory effects, including gallic acid and ellagic acid. It has also been proven that the active compounds in bandicoot berries have anti-inflammatory importance, which makes the plant able to reduce inflammation and various cellular injuries by regulating Proinflammatory cytokines such as tumor necrosis factor α -TNF, interleukin β 1 -IL and -8IL also modulate and regulate these cytokines and their receptors [24].

2. CONCLUSION

The pandicotta berry plant is one of the most medicinal plants, rich in antioxidants, which plays a key role in treating various diseases, including cancer, arthritis, sexual disorders, influenza, and fever, as well as regulating blood sugar and lipid levels. Alcoholic extracts of pandanus leaves have been found to play a role in inhibiting the growth of cancer cells, including prostate cancer.

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