



A Review on Current Knowledge of Medicinal Properties of *Garcinia quaesita*

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Abstract

Garcinia quaesita is an endemic plant to Sri Lanka, has garnered attention from traditional medicine practitioners and researchers due to its diverse medicinal properties. *G. quaesita* have been traditionally used to treat conditions like fevers, fractures, hyperlipidemia, wounds, and hemorrhoids. This review amalgamates data from scientific papers, ayurvedic texts, and other sources. It provides information on its botanical descriptions, phyto-constituents, antioxidant, antibacterial, anti-hyperglycemic, anti-inflammatory, cytotoxic and anticancer activities. There have been few studies that reported the medicinal properties of the leaf, fruit rind and fruit. The presences of phytoconstituents such as alkaloids, glycosides, flavonoids, saponins, tannins, terpenoids, polyphenolics, coumarins, phytosterols, betacyanin, quinones were found as the responsible for the medicinal properties, Notably, the presence of garcinol was one of the responsible compounds for the bioactivity of *G. quaesita*. This all-encompassing review accentuates the diverse aspects of medicinal property of *G. quaesita* and its chemical composition, facilitates the identification of novel pharmaceutical products.

Keywords: *Garcinia quaesita*, medicinal properties, endemic plant, Sri Lanka

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1 Introduction

Sri Lanka stands out as a world's biodiversity hotspot, boasting the highest biodiversity per 10,000 square kilometers in Asia, particularly within its lush tropical rainforests, where approximately 70% of endemic terrestrial evergreen plants are documented [1].

Garcinia is a genus of flowering plants in the Clusiaceae family. It is widely distributed throughout tropical regions of Asia, Africa, New Caledonia, Polynesia, and Brazil. *Garcinia* plants have been of interest to researchers and traditional medicine practitioners due to their rich chemical compositions. A diverse array of biologically active metabolites has been extracted from these plants and their certain medicinal properties and potential health benefits were studied [2].

Garcinia quaesita, belongs to the genus *Garcinia*, an endemic plant to Sri Lanka known as "Rath Goraka", and commonly called as "Goraka" is thrives in the wet and wild intermediate zone of Sri Lanka [3]. It is cultivated for its fruits which are used in cooking and Ayurvedic medicine. In addition, the various parts of the plant including leaf, bark, fruits, and seeds have been traditionally used to treat conditions like fevers, fractures, hyperlipidemia, wounds, stomachic, dealing with anorexia, chronic dyspepsia, hypertension, dyslipidemia and hemorrhoids [4]. Dried fruit rinds of *G. quaesita* are used in traditional medicine as they possess remarkable qualities and serve as astringents, antiseptics, and stomachic agents [5].

Laboratory studies have found that non-polar extracts from the dried fruits of *G. quaesita* exhibit exceptionally strong antioxidant activity, surpassing the potency of the well-known antioxidant, ascorbic acid [6]. Moreover, fruit extracts derived from *G. quaesita* have garnered considerable attention as effective ingredients in weight-reducing agents today [5].

Additionally, *G. quaesita* rinds are prized as curry ingredients and condiments, infusing dishes with their unique tangy taste [7]. This review brings information on its botanical descriptions, phyto-constituents and medicinal activities. This could facilitate the future exploration of more pharmacological activities of *G. quaesita*.

2 Botanical Description

G. quaesita is a tree that grows up to a height of 20 meters and has a glabrous exterior. The bark has a rough texture and dark rusty to blackish in color. The leaves are leathery in texture and measure roughly about 3.5 x 12 cm to 6.5 x 10 cm. The petioles, which are the stalks that join the leaves to the stem, approximately 1 to 1.5 cm long. The flowers of this species are white in color. The male flowers of this species have pedicels up to 2 cm long and grouped on the top leaf axils. In contrast, female flowers are solitary. The fruit of *G. quaesita* is globose to sub-ovoid and varies in color from red to orange red. The fruit has a glossy appearance and grows up to 5 cm in diameter. The sepals, which are still attached and folded backward behind the fruit long after it ripens, are one distinguishing trait of this plant [4].

Taxonomic classification of *Garcinia quaesita* [8].

Kingdom	Plantae,
Sub kingdom	Tracheophytes,
Division	Magnoliophyta,
Class	Magnoliopsida,
Order	Theales,
Family	Clusiaceae,
Sub family	Clusioideae
Genus	<i>Garcinia</i>
Species	<i>G. quaesita</i>



Figure 1 *Garcinia quaesita*

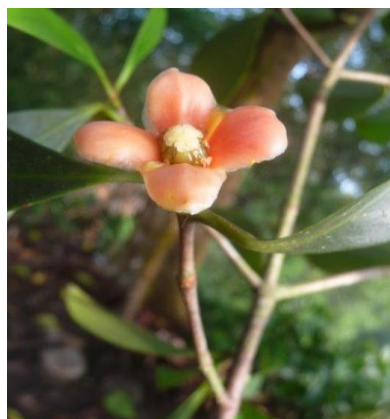


Figure 2 Flower of *G. quaesita*



Figure 3 Fruit of *G. quaesita*

3 Medicinal Activities

3.1 Phytochemical analysis

The extraction process is a crucial step to extract the potential bioactive compounds from the plant materials. The efficiency of the extraction process is affected by the solvent, temperature, pressure, pH, time, solid-liquid

ratio and particle size [9]. Meanwhile the type of phytochemical present and the amount depend on the type of plant and plant parts. Furthermore, variations in ecological and geographical factors can result in differing chemical compositions and quantities, among the same type of plant [10].

Kokilanathan *et.al* investigated the effects of extraction methods on phytochemical of *G. quaesita* dried leaves. *G. quaesita* leaf was extracted under different extraction techniques such as sonication (one hour at room temperature), Soxhlet extraction (six hours at 105°C), maceration with agitation (six hours at room temperature and 1000 rpm), and maceration with agitation upon heating (six hours at 60°C and 1000 rpm) in order to monitor the effect of different extraction techniques by using water as the solvent. The results revealed that the higher yielded percentage (6.44%) was observed for the Soxhlet extraction method followed by maceration with agitation and heating (6.18%) [11]. On the other hand, dried leaves from *G. quaesita* were extracted using methanol as a solvent for the evaluation of phytochemicals by maceration (48 hours at Room Temperature) and sonicated by using ultrasound-assisted-extractor (One hour at Room Temperature). It was found that the sonicated extraction method resulted in higher yields around 19.5%w/w compared to maceration [7].

The phytochemical screening of the water extract of dried leaves of *G. quaesita* using sonication, Soxhlet extraction, maceration with agitation, and maceration with agitation upon heating was unveiled the presence of significant secondary metabolites, including alkaloids, glycosides, flavonoids, saponins, tannins, terpenoids, polyphenols, coumarins, phytosterols, betacyanin, and quinones. Anthocyanins and chalcones were absent in all the aqueous extracts of *Garcinia* leaf [11]. Methanolic extract of dried leaves of *G. quaesita* by maceration exhibited presence of highly important secondary metabolites such as flavonoids, saponins, alkaloids, glycosides, phenols, tannins, terpenoids, phytosterols, carbohydrates, proteins, soluble starch, coumarins, anthracene derivatives, betacyanin, anthraquinones and quinones [7].

Quantitative estimation of total phenolic flavonoid, tannin, terpenoid, alkaloid and

saponin of the water extract of dried leaves done by the *Kokilanathan et.al*. They indicated that the maceration with agitation upon heating method proved to be highly efficient in extracting polyphenols, tannins, saponins and antioxidants other than sonication, Soxhlet extraction, and maceration with agitation. On the other hand, the Soxhlet extraction method exhibited the best extraction results for flavonoids and terpenoids. Additionally, the maceration with agitation method displayed highest proficiency in extracting alkaloids. However, statistical analysis revealed that both sonication and maceration with agitation were best in extracting alkaloids from *G. quaesita* leaves with significantly no difference in quantity [11]. Weerakkody *et.al* studied the total phenolic content of the water and ethanolic extract of dry goraka and found that the total phenolic content was 11.32 mgGAE/g in dry sample and 32.21 mgGAE/g dry in sample respectively [12]. In addition, *Dulani et.al* reported that the composition of the phytochemical varied with the location.

Essential oils (Eos) were isolated from the leaves of *G. quaesita* using hydro-distillation technique to determine the chemical composition by using GC-MS analysis which revealed the presence of 33 distinct compounds which had more than 90% matching value. Notably, essential oil extracts contained sesquiterpenes in high concentration and others such as copane, (-)- α -gurjunene, caryophyllene, α -humulene, alloaromadendrene, α -elemene, β -humulene, ionol, δ -cadinene, nerolidol, (-)-globulol, and heneicosane [13]. Furthermore, antioxidant compounds such as gallic acid, catechin, quercetin and garcinol were found in leaf extracts and dried fruit respectively [6],[14].

Proximate composition such as moisture, ash, crude, fiber, crude fat, carbohydrate, total solids and energy were explored for the leaf. Based on the analysis, moisture, total solid, ash, crude fat, crude fibre, crude protein, carbohydrate and energy exhibited $17.32 \pm 0.03\%$, $82.68 \pm 0.03\%$, $4.95 \pm 0.60\%$, $2.47 \pm 0.13\%$, $27.83 \pm 1.08\%$, $8.75 \pm 0.00\%$, $66.51 \pm 0.74\%$, 323.24 ± 1.82 kcal/100g respectively [7].

3.2 Antioxidant potential

Free radicals, a type of reactive oxygen species, can cause damage or death to cells by initiating a chain reaction, which is the major contributor to aging and disease like cancer, heart disease, the deterioration of cognitive function, and immune system failure [15]. Antioxidants are the substances that can terminate the chain reaction by getting rid of the free radical intermediates and preventing other oxidation processes. Herbal bioactive substances have attracted significant interest in medicine due to their ability to scavenge free radicals. Therefore, the scientific community has shown considerable interest in antioxidant analysis of the herbals [16].

Antioxidant activity was carried out for the water extract of leaves which was extracted using different extraction method such as sonication, Soxhlet extraction, maceration with agitation, and maceration with agitation upon heating. The antioxidant potential was assessed using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay using ascorbic acid and Trolox as standard and ferric reducing antioxidant power (FRAP) assay using Trolox as standard utilizing a UV spectrophotometer technique. The FRAP analysis revealed that maceration with agitation upon heating (72.08 mg Trolox Eq/g) has more antioxidant activity than the other extraction techniques. In contrast DPPH assay revealed that the maceration with agitation showed comparatively high scavenging activity compared to the other three methods with a value of 10.49 ± 0.12 mg/ml whereas the IC_{50} values of standards, such as ascorbic acid and Trolox, were found to be 0.11 ± 0.00 mg/ml and 0.10 ± 0.00 mg/ml, respectively [11]. Similar antioxidant assays were employed to examine the methanolic extract of leaves. According to the FRAP analysis, it had a high reducing power with a value of 225.63 ± 2.01 mg Trolox Eq/g. Likewise in DPPH had a scavenging activity with a value of 47.45 ± 0.03 ppm while the standard ascorbic acid showed 4.06 ± 0.01 ppm [7].

Gallic acid, quercetin, and catechin were effectively isolated from *G. quaesita* leaves for the evaluation of antioxidant activity. Notably, gallic acid exhibited a markedly higher antioxidant activity compared to other two isolates in both FRAP and DPPH assays. FRAP value was $4,112.98 \pm 42.21$ mg Trolox Eq. and an

IC₅₀ value was 32.64±0.05 ppm [14]. Moreover, antioxidant activity of essential oil, extracted from leaf was investigated and it also showed high antioxidant property [13].

Antioxidant activity of dried fruit rinds was studied by employing different extraction solvents such as hexane, ethyl acetate and methanol using FRAP and DPPH assay. For the DPPH assay, IC₅₀ values of hexane, ethyl acetate, and methanol extracts of dried fruit rinds were 8.74 ± 0.75, 77.36 ± 0.82, and 340.8 ± 1.02 ppm, respectively. This study indicated that the presence of non-polar compound- Garcinol was responsible for the antioxidant activity. Garcinol showed strong antioxidant activity compared to the standard and its activity depends on the presence of polyphenolic structure[6]. Colamba Pathirana *et.al* indicated that the hexane extract of fruit showed considerable activity because of the presence of polyphenols and flavonoids. Aqueous ethanol extract of fresh fruit showed potent antioxidant activity due the presence of polyphenolic compounds, flavonoids and other metabolites [17].

In Sri Lanka, dried fruit of *G. quaesita* used in the preparation of traditional curries as a spice to impart sour flavour. Liyanagamage *et.al* was estimated the concentration of Garcinol in the different form of cooking conditions at pH 2, pH 4, distilled water, coconut milk, virgin coconut oil (room temp and boil) and saturated salt solution. Antioxidant property was analyzed by performing DPPH assay using ascorbic acid as standard. The high concentration of Garcinol and antioxidant activity was observed for virgin coconut oil (boil and room temp) followed by distilled water. The result indicated that garcinol release can occur in non-polar and polar aqueous environments due to presences of hydrophilic groups. The scavenging potential was correlated with garcinol content present in different curry mediums. Traditional cooking with *G. quaesita* using both oil and water emerged as a practical approach to enhance garcinol's release and potential health benefits [6].

3.3 Antibacterial Activity

Several antibiotics have been produced to treat bacterial infections. Somehow, antibacterial resistance is an increasing problem in the medical field. Therefore, the development of novel antibiotics with a

different mechanism of action is necessary. Natural resources are the best options to find antimicrobial active compounds. Phytochemicals such as alkaloids, saponins, tannins, steroids and flavonoids are antimicrobial active substances which can be used for the development of the new antibiotic [18].

Two scientific reports have been published on the antimicrobial activity of *G. quaesita*. Hexane, ethanol, and water solvents used to prepare the extracts of dried gorka (*G. quaesita*) were examined the antibacterial activity against food borne bacterial such as *Listeria monocytogenes* Scott, *Staphylococcus aureus*, *Salmonella Typhimurium* and *Escherichia coli* using the disc diffusion assay and broth diffusion assay. Total phenolic content was estimated to correlated with the antibacterial activity. The water extract exhibited best outcome for disc diffusion assay for all four organisms with the values of 17.8 mm, 13.1 mm, 7.8 mm, and 12.1 mm respectively and there was a significant variation (P<0.05) observed among three different solvents extracts. Further, they indicated that the antibacterial activity was influenced by the pH of test medium. *E. coli*, *S. aureus*, and *L. monocytogenes* were not inhibited by neutral pH and indicating that the acidic pH of the *G. quaesita* extract is essential to its antibacterial activity. The researchers suggested that the presence of high amount of hydroxycitric acid in the fruit rinds might be a contributing factor to the potent antimicrobial activity observed in dried *G. quaesita* fruit. *G. quaesita* exhibited very low levels of total phenolic content and the finding indicated that the relationship between total phenolic content and antibacterial activity is very low [12].

Garcinol was isolated from the fruit, and it was used to cap silver nanoparticles by a series of sequential procedures, forming G-AgNPs which was tested the antimicrobial activity against *S. aureus*, *E. coli*, *Pseudomonas aeruginosa*, *Candida albicans* and a clinical isolate of MRSA using agar diffusion assay, broth micro-dilution and time-kill assay by plate-coating method. According to the results obtained from disc diffusion assay, garcinol showed better activity than G-AgNPs for MRSA, *S. aureus*, *P. aeruginosa* whereas AgNPs and G-AgNPs showed better activity for *E. coli* and *C.*

albicans both. This study indicated that the chelated hydroxyl groups that are located in the first carbon position of garcinol are likely to attribute the potent antibacterial property. These hydroxyl groups have the ability to bind with essential cations needed for microbial growth and survival. Likewise, the small reduction in the zone of inhibition for the G-AgNPs compared to garcinol against MRSA, *S. aureus*, *P. aeruginosa* was due to the reduced nanoparticle diffusion by the larger particle size. This study indicated that the size of nanoparticles, which ranges from 7 to 22 nm with a median size of 8 nm, is advantageous for improving stability and biocompatibility. Additionally, the high surface-to-volume ratio of these tiny nanoparticles enhances their antibacterial activity and interactions with microbes. However, there was no a significant synergistic effect observed between garcinol and AgNPs [19].

3.4 Antihyperglycemic activity

The most prevalent endocrine disorder in the world is diabetes mellitus (DM) [20]. It is a non-communicable disease, often genetic in nature but can be developed due to lifestyle mishaps. Isolated bioactive compounds from medicinal plants, possessing potent antihyperglycemic properties, offer promising avenues for the development of innovative anti diabetic therapies.

Antihyperglycemic activity was examined for hot and cold water, aqueous acetone extracts of fruit and garcinol in the streptozotocin-induced diabetic rats, glibenclamide used as positive control. Hot water and aqueous acetone extract exhibited the most substantial reduction in blood glucose levels, a notable 5% decrease compared to cold extracts. Even though, acute antihyperglycemic effects were found to be not statistically comparable to those of glibenclamide ($p > 0.05$). Meanwhile garcinol showed greater activity at the dose of 10 mg/kg and it displayed a dose-dependent antihyperglycemic effect, with percentage reductions in blood glucose levels of 31.1%, when compared to the reference drug glibenclamide (0.5 mg/kg), which exhibited a reduction of 36.1% ($p < 0.05$) underscoring the potential of these compounds in managing hyperglycemia [5].

3.5 Anti-inflammatory activity

Inflammation usually happens when infectious microorganisms attack the body, tissue injury, cell death, cancer, ischemia and degeneration. As mostly, both the innate immune response as well as the adaptive immune response are involved in the formation of inflammation [21]. However, many diseases such as atherosclerosis, arthritis, cancer, and ischemic heart disease may be caused during the inflammation process. Finding a natural compound which can inhibit the prolonged action of inflammation is essential to maintain human health.

There has been only one study on the anti-hyperglycemic activity of *G. quaesita*, reported by Liyanagamage *et.al*. Aqueous ethanolic fresh fruit extract of *G. quaesita* exhibited a greater inhibition percentage against heat-induced hemolysis compared to the standard O-Acetylsalicylic acid, within the context of the human red blood cell membrane stabilization method. This study indicated that the presence of polyphenolic compounds, flavonoids and other metabolites play a role in generating potent anti-inflammatory effect [3].

3.6 Cytotoxicity

Cytotoxicity means the ability of the chemical or chemotherapeutic agents or mediator cells damage health living cells. This can be triggered by the chemical, exposed to another cell and physical or chemical environment [22]. Evaluation of the cytotoxicity of a particular bioactive compound/s extracted from the natural occurrence is an important process as it is used for the preparation of pharmaceutical or cosmetic.

Only one scientific publication has been reported regarding the cytotoxicity of *G. quaesita*. The brine shrimp lethality assay was used as an initial method for evaluating the cytotoxic potential of aqueous extracts from *G. quaesita* leaves. According to the Clarkson's toxicity criteria, the toxicity profiles named as non toc, low toxic, medium toxic and high toxic ($LC_{50} \geq 1000$ ppm; non-toxic, LC_{50} 500– 1000 ppm; low toxic, LC_{50} 100-500 ppm; medium-toxic, and extracts with $LC_{50} \leq 100$ ppm are very toxic. LC_{50} value of aqueous extracts of *G. quaesita* leaf was 2.2. ppm. The findings

strongly suggest that the extract derived from *G. quaesita* leaf demonstrates high toxicity [23].

3.7 Anticancer Activity

Cancer is defined as the uncontrolled development of abnormal cells and spread all over the body. There are certain number of anticancer drugs available even though they act on both cancer cell and normal cell. The main challenge is to find out the anticancer drug which is only toxic to the cancer cell not for the healthy cell. One of the options is to find out the anticancer drug from natural occurrences.

There has been only one study that reported the anticancer activity of *G. quaesita*.

Fruit was extracted with hexane, chloroform, ethyl acetate and methanol to assess the anticancer activity in bCSCs and normal mammary epithelial cells. Among the four different extracts, hexane extract used for the evaluation of the anticancer activity as it was posed high antiproliferative activity and less toxic to normal mammary epithelial cells. Further hexane extract exhibited the apoptotic effects [17].

The summary of the phytochemical present and pharmacological activities of *G. quaesita* is given in the following table 1.

Table 1 The summary of the phytochemical present and medicinal activities of *G. quaesita*

Parts	Extraction Method	Solvent	Bioassay & Results	Quantity of phytochemical Present	Phytochemical Present
Leaves–Essential Oils	Hydro distillation method	Water [13]	<i>Antioxidant activity</i> FRAP - 274.74 ± 1.32 µL Trolox Eq/L	-	Copaene, (-)-α-Gurjunene, Caryophyllene, β-Maaliene, α-Humullene, Alloaromadendrene, α-elemene, ionol, δ-cadinene, nerolidol, (-)-globulol, Heneicosane
Leaves	Sonication(a)	Water [11]	<i>Antioxidant activity</i> FRAP - 72.08 ± 0.00 µL Trolox Eq/L (d)	Total phenolic content- 60.73 ± 0.06 mg GAE/g (d)	Alkaloids, Glycosides, Flavonoids, Saponins, Tannins, Terpenoids, Polyphenolics, Coumarins, Phytosterols, Betacyanin, Quinones
	Soxhlet(b)		DPPH – 10.49 ± 0.12 mg/ml (c)	Total Flavonoid Content- 3.02 ± 0.00 mg GE/g (b)	
	Maceration with agitation(c)	with		Total Terpenoid Content- 60.12 ± 0.06 mg TAE/g (d)	
	Maceration with agitation heating(d)	with upon		Tannin content 17.75 ± 0.04 mM TE/g (b)	
Leaves	Maceration	Methanol[7]	<i>Antioxidant activity</i> FRAP - 225.63 ± 2.01 mg Trolox Eq/L	Alkaloid content 1.16 ± 0.03 mg AE/g (c)	Flavanoids, Saponins, Alkaloids, Glycosides, Phenols, Tannins, Terpenoids, Phytosterols, Carbohydrates, Proteins, Soluble starch, Coumarins, Anthracene derivatives, Betacyanin, Anthraquinones, quinones
			DPPH – 47.45 ± 0.03 ppm	Saponin content 257.64 ± 0.72 mg SE/g (d)	
	Sonication			Total Phenolic Content – 202.14±2.27µg GAE/g extract	
Leaves- Gallic Acid	Fractionation	Methanol [14]	<i>Antioxidant activity – Gallic acid</i> FRAP - 4112.98 ± 42.21 mg Trolox Eq/L	Total Tannin Content 185.45 ± 0.86 TAE/g extract	
			DPPH – 32.64 ± 0.05 ppm	Terpenoid Content 25.23 ± 0.03 mM LE/g extract	
Leaves	Aqueous Extraction	Water [23]	<i>Cytotoxic activity</i> Brine Shrimp Lethality Assay- LC ₅₀ value – 1660 ppm		
Fresh Fruits	Maceration	Aqueous [3] Ethanol	<i>Antioxidant activity</i> DPPH Percentage of inhibition 35.13 % - 61.59 % at the concentration of 31.25µg/ml- 500µg/ml	Total Phenolic Content – 3053.25±30.07 µg GAE/mL ⁻¹ extract. Total Flavonoid Content 443.19 ± 4.76 µg CE/mL ⁻¹	

Table 1 Continu

Parts	Extraction Method	Solvent	Bioassay & Results	Quantity of phytochemical Present	Phytochemical Present
Fruit Rinds		Hexane [6]	<i>Antioxidant activity</i> DPPH – 8.74 ± 0.75 ppm	266 ppm 96 ppm 138 ppm 18 ppm 336 ppm	Content of garcinol
		Ethyl acetate	DPPH – 77.36 ± 0.82 ppm		
		Methanol	DPPH – 340.8 ± 1.02 ppm		
		Distilled water	DPPH – 15.86 ± 0.1 ppm		
		Distilled water & acetic acid in pH 2	DPPH – 55.72 ± 1.8 ppm		
		Distilled water & acetic acid in pH 4	DPPH – 44.72 ± 0.4 ppm		
		Natural coconut milk	DPPH – 34.78 ± 1.0 ppm		
Fruits	Soxhlet	Virgin coconut oil (RT)	DPPH – 8.64 ± 1.2 ppm		
		Methanol [19]	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <u>Garcinol 1.0mg/ml</u> MRSA - 24.7 ± 0.75 <i>S. aureus</i> - 22.3 ± 0.75 <i>P. aureuginosa</i> - 24.7 ± 0.75 <i>E. coli</i> - 17.7 ± 0.75 <i>C. albicans</i> - 9.0 ± 0.75		
			<u>G-AgNP 0.8mg/ml</u> MRSA - 21.7 ± 0.75 <i>S. aureus</i> - 15.7 ± 0.75 <i>P. aureuginosa</i> - 18.0 ± 0.75 <i>E. coli</i> - 21.3 ± 0.75 <i>C. albicans</i> - 15.3 ± 0.75		
		Water [12]	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Ethanol	<i>Anti-hyperglycemic activity (Fasting Serum Glucose mmol/L)</i> Garcinol 10mg/kg 12.78 ± 0.13 Garcinol 20mg/kg 12.40 ± 0.53 Garcinol 30mg/kg 12.52 ± 0.54		
		Hexane	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Hexane [5]	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Cold Water	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Water: acetone 1:1	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Hot Water	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
Dried Fruit		Water [12]	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1	Total Phenolic Content – 11.32 ± 1.56 mg GAE/g extract Total Phenolic Content – 32.21 ± 3.94 mg GAE/g extract Total Phenolic Content – Not Determined	
		Ethanol	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Hexane	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		
		Hexane [5]	<i>Anti-bacterial activity (Zone of Inhibition in mm)</i> <i>E. coli</i> -12.1 <i>S. Typhimurium</i> - 7.8 <i>L. monocytogens</i> 17.8 <i>S. aureus</i> -13.1 <i>E. coli</i> - 12.2 <i>S. Typhimurium</i> - 6.5 <i>L. monocytogens</i> 13.0 <i>S. aureus</i> -13.6 <i>E. coli</i> - 6.9 <i>S. Typhimurium</i> - 5.5 <i>L. monocytogens</i> -15.8 <i>S. aureus</i> -12.1		

4 Conclusions

Herbal remedies have been used for a long time to manage the different disease conditions. Still nearly 80% of the world population depends on herbal treatment methods and drugs to cure their disease. *Garcinia quaesita*, belongs to the genus *Garcinia*, an endemic plant to Sri Lanka, which have been traditionally used to treat conditions like fevers, fractures, hyperlipidemia, wounds, and hemorrhoids. This

review illuminates the diverse and invaluable characteristics of *G. quaesita*, a plant deeply rooted in traditional medicine and indigenous practices. Its rich chemical composition, particularly in leaf and fruit, offers an abundant bioactive metabolite with potential health benefits. The plant's antioxidant potential, antibacterial, anti-hyperglycemic properties, anti-inflammatory effects, cytotoxicity and anticancer have been extensively explored. Notably, compounds like garcinol have shown

promise in addressing chronic diseases and cancer. However, further analysis is required to explore the potential of this plant. The study underscores the importance of this endemic plant in medicine, suggesting its potential for developing functional foods and novel pharmaceutical interventions.

5 Declarations

5.1 Author Contributions

The names of the authors listed in this journal contributed to this research.

5.2 Funding Statement

This research received no external funding.

5.3 Conflicts of Interest

Authors declare that they do not have any conflict of interest.

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