International Journal of Botany Studies
www.botanyjournals.com
ISSN: 2455-541X
Received: 20-08-2021, Accepted: 05-09-2021, Published: 21-09-2021
Volume 6, Issue 5, 2021, Page No. 729-735

Qualitative phytochemical analysis and antibacterial activity of some medicinal plants from surrounding area of Talod Taluka, North Gujarat, India

Panchal Mital D, Charuben V Jha
PG Centre in Botany, S M Panchal Science College, Talod, Sabarkantha, Gujarat, India

Abstract
The Aim of this Study is to examine the Phytochemical analysis of five medicinal plants Stem bark and Leaves in Acetone and Aqueous extract. To examine the Antibacterial activity of Five Plants Like *Manilkara zapota, Manilkara hexandra, Mangifera indica, Madhuka indica, Annona squamosa* Stem bark and Leaves Acetone and Aqueous extract against two-gram positive bacteria like *Staphylococcus aureus* and *Bacillus subtilis*, two Gram negative bacteria like *Escherichia coli* and *Salmonella enterica* by Agar well diffusion method. In Phytochemical analysis on the basis of different Plant part and different extraction solvent Phytochemical present or absent. *Manilkara hexandra* leaves Aqueous extract more effective against inhibition of *Staphylococcus aureus* bacteria compare to another plant parts. *Annona squamosa* Leaves Acetone extract more effective against inhibition of *Staphylococcus aureus* bacteria compare to another plant parts. Antibacterial activity against *Bacillus subtilis* no inhibition found at all. In the case of *Escherichia coli* only one plant *Mangifera indica* leaves Acetone extract inhibit the growth. *Annona squamosa* stem bark Acetone extract more effective against inhibition of *Escherichia coli* bacteria compare to another plant parts. *Manilkara hexandra* leaves Aqueous extract more effective against inhibition of *Salmonella enterica* bacteria compare to another plant parts. *Manilkara zapota* stem bark Acetone extract more effective against inhibition of *Salmonella enterica* bacteria compare to another plant parts.

Keywords: *phytochemical analysis, Manilkara zapota, Manilkara hexandra, Mangifera indica, Madhuka indica annona squamosa,* antibacterial activity

Introduction

For thousands of years, nature has served as a rich reservoir of medicinal herbs, and an astounding number of modern medications have been obtained from natural sources, particularly those of plant origin. Herbal therapy has been the basis of treatment for numerous ailments in India from ancient times, based on their traditional applications in the form of powders, liquids, or combinations. (Kaur G. J *et al*. 2009) [6] Medicinal plants are effective natural sources of materials for treating a variety of infectious diseases in humans, so scientists are concentrating their efforts on discovering natural compounds from medicinal plants with the goal of developing new drugs that are more effective than those currently on the market. (Uthayarasa K *et al*. 2010) [19] Antibiotic resistance is one of the most important public health issues, particularly in underdeveloped nations where infectious illness is still a leading cause of death. Staphylococcus aureus is one of the germs that provide a considerable health risk, as this species is responsible for a variety of human illnesses, including skin infections and septicaemia. The genus Candida is one of the most important fungal pathogens, as it causes a wide range of diseases, from superficial mucocutaneous infections to more extensive disease. (Silva APS *et al*. 2016) [17] Due to the rise of microorganisms resistant to currently existing antibiotics, the search for novel antibacterial medicines has become necessary. Gram positive bacteria, such as Staphylococcus aureus, cause post-operative wound infections, toxic shock syndrome, endocarditis, osteomyelitis, and food poisoning. Gram negative bacteria, such as Escherichia coli, produce a lower urinary tract infection, colecystis, or septicaemia in the human gut. Multiple drug resistance has developed in human pathogenic bacteria as a result of the indiscriminate use of industrial antimicrobial medicines commonly employed in the treatment of infectious diseases. (Amenu Desalegn *et al*. 2014) [1] Several antibacterial, antifungal, and antiprotozoal plants and natural products could be used systemically or locally. When opposed to synthetic pharmaceuticals, plant medicinal features are also chosen over the world because to their large pharmacological activities, reduced toxicity, and financial sustainability. Bioactive secondary metabolites found in medicinal plants include tannins, alkaloids, saponins, flavonoids, and phenolic compounds, all of which have physiological effects on the human body.

Five plants were chosen for Phyto Chemical analysis and Antibacterial activity in this study: *Manilkara zapota, Manilkara hexandra, Mangifera indica, Madhuka indica*, and *Annona squamosa* stem bark and leaves. A *Manilkara zapota* Leaf decoction is used to treat fever, haemorrhage, wounds, and ulcers. Fever, gas, stomach, jaundice, deworming, and other ailments are treated with the bark of *Manilkara hexandra*. Bark decoction is used to treat dysentery, diarrhoea, and body aches. Root is useful for Head Ache, and A Leaf is used for Asthma. Diarrhoea, Dysentery, Anaemia, Asthma, Bronchitis, Cough, Hypertension, Insomnia, Rheumatism, Tooth Ache, Leucorrhoea, Haemorrhage, and Piles are some of the ailments that *Mangifera indica* plant components are used to cure. To help digestion and alleviate rheumatism, an infusion of *Annona squamosa* leaves and fruit is employed. (Zahid M *et al*.2019) [20]

Material and Method

Scope of Study

The Research was carried out in the Disha Life Science Pvt.Ltd. Ahmedabad. The Research work focused on the detection and determination of the Phytochemical in the Acetone, Chloroform and Aqueous crude extracts of the Stem bark and Leaves of the selected five Plants i.e., *Manilkara zapota* (L.) van Royen, *Manilkara hexandra* (Roxb.) Dub, *Mangifera indica* L., *Madhuka indica* J.F. Gmel., *Annona squamosa* L.

Study Area

Talod is taluka or tehsil, in the district of Sabarkantha, in the state of Gujarat with a total population of 154424. According to census 2011 information location code or village code is 510711. Badodara village is located in Talod tehsil of Sabarkantha district in Gujarat, India. It is situated 12 km away from sub-district headquarter Talod and 40km away from district headquarter Himmat Nagar. As per 2009 status, Badodara village is also a Gram panchayat. The village covers a total area of 1270.57 hectares. Badodara has a total population of 7,717 peoples. In Badodara village, there are around 1,506 dwellings. Talod is the closest town to Badodara, which is around 12 kilometres away. As per constitution of India and Panchayati Raj Act, Badodara village is administrated by sarpanch (Head of village) who is selected representative of village. Cotton, Wheat and Bajara are Agriculture commodities grow in this village. This community has 8 hours of agricultural power supply in the summer and 8 hours of agricultural power supply in the winter. Boreholes/ Tube wells are the source of irrigation for this village's total irrigated area of 620 hectares.

Plant collection and Identification

Matured Plants Stem bark and Leaves were collected during the April 2019 from surrounding area of Talod taluka, North Gujarat, India. The five plants were identified with the help of G.L. Shah Flora.

Preparation of the Plant parts

Plant materials (stem bark and leaves) were carefully rinsed in tap water after collection and identification to remove dust and soil particles. The plant portions were then air dried in the shade to avoid the chemical contents from being inactivated by ultraviolet light. With the use of a mechanical grinder, the separate Plant pieces were ground into powder form.

Procedure for Preparation of the crude extracts

Extraction Technique

Extraction is the separation of inert plant tissue constituents from medicinally active plant tissue constituents using a conventional extraction process. Menstrum is a selective solvent that is used to eliminate inert material and to obtain the curative part of the procedure through therapy.

Solvent extraction

The crude plant extract was made using the Soxhlet extraction method. 10 gm of powdered plant material was placed into a thimble, and 300 ml of solvents were extracted separately. Acetone and chloroform were utilized as solvents. In a syphon tube of an extractor, the extraction process continued for 24 hours until the solvent became colour less. The extract was then placed in a beaker. The extract was then retained and cooked on a hot plate at 30-40°C until all the solvent had evaporated. The dried extract was stored at 4°C in a refrigerator for future phytochemical investigation.

Phytochemical Analysis

Chemical tests are carried out on various organic and aqueous extracts of each plant using standardized procedures.

Qualitative Phytochemical Analysis

Alkaloid

Wagner's test: A few drops of Wagner's reagent were applied to 2mg of extract that had been acidified with 1.5 percent v/v hydrochloric acid. The presence of alkaloids is indicated by a yellow or brown ppt. (C. Kodangala *et al*.2010.)

Carbohydrates

Molisch's test: 2 mg of ethanolic extract was mixed with 10 ml water, filtered, and concentrated. 2ml of conc. sulphuric acid was added to these 2 drops of freshly prepared 20% alcoholic alpha-naphthol solution, forming a layer below the mixture red-violet ring, showing the existence of carbohydrates that disappears when sufficient alkali is added. (C. Kodangala *et al*.2010.)

Proteins: adding 1 ml of 40 percent sodium hydroxide and a few drops of 1 percent copper sulphate to 2 ml of each extract. The production of violet colour shows the presence of peptide linkage molecules in the sample extract. (C. Kodangala *et al*.2010.)

Glycosides: 0.5 ml of glacial acetic acid and 3 drops of 1% aqueous ferric chloride solution added in to 1 ml of each extract. The creation of a brown ring at the interface shows the presence of glycosides in the sample extract. (R.M. Prabhavati *et al*.2016)

Tannin: A few drops of a 5 percent w/v Fecl3 solution were added to 1-2 ml of the ethanolic extract. Gallo tannins are shown by a green colour, whereas pseudo tannins are indicated by a brown colour. (C. Kodangala *et al*.2010.)

Terpenoids: 1 ml of each solvent is mixed with 0.5 ml chloroform and a few drops of strong sulphuric acid to produce a reddish-brown precipitate that confirms the presence of Terpenoid in the extract. (R.M. Prabhavati *et al*.2016)

Saponins: 6 ml distilled water was added to 2 ml of each extract and rapidly shaken; the presence of saponin is indicated by the production of bubbles or persistent foam. (R.M. Prabhavati *et al*.2016)

Flavonoids: After mixing 2 mL of each extract with a few drops of 20% sodium hydroxide, a bright yellow colour was seen. A few drops of 70% dilute hydrochloric acid were added to this, and the yellow coloration disappeared. The presence of flavonoids in the sample extract is shown by the formation and disappearance of yellow colour. (R.M. Prabhavati *et al*.2016)

Steroids

Salkowski reaction: 2 mg of dry extract was combined with chloroform, to the chloroform layer sulphuric acid was

gently introduced by the sides of the test tube. The emergence of a red colour indicated the presence of steroids. (C. Kodangala *et al*.2010.) [2]

Antibacterial activity

Maintenance of Bacteria

Four bacterial strains in which Two were Gram positive: *Staphylococcus aureus, Bacillus subtilis* and Two were Gram negative *Escherichia coli, Salmonella enterica* were used in this study.

All the bacterial strains were clinically isolates obtained from Microbial Type culture collection, Pune.

Collection of Plant materials

The Medicinal Plants used for the experiment were *Manilkara zapota, Manilkara hexandra, Mangifera indica, Madhuka indica, Annona squamosa*. The Plant material were collected from the surrounding area of Talod taluka, North Gujarat, India.

Preparation of Plant Extracts

Collected Plant parts were washed thoroughly and chopped into small pieces, shade dried and grinded into powdered form with the help of mechanical grinder. 2gm of powdered plant material was dissolved in 10 ml of three different solvent like Acetone, Chloroform and Water respectively for 24 hours. This solution was sonicated for 10 min and filter it and used for further Antibacterial activity test.

Determination of Antibacterial activity

Antibacterial activity of different Plant extracts was determined by Agar well diffusion method. 0.1 ml of Freshly grown culture of test organisms (10^6 CFU/ml) was aseptically introduced and spread on surface of sterile agar plate. Wells of 6mm diameter were made in agar plate with help of sterile cork-borer. 50µl of different plant extract and same volume of extraction solvent for negative control were filled in the wells with the help of micro pipette. Standard reference antibiotic like Ampicillin was used as positive control for the test organisms. Plates were left for some times at 4℃ till the extracts diffuses in the medium with the lid closed and incubated at 37℃ for 24 hr. The zones of inhibition on the plates were examined. Antibacterial activity was evaluated by measuring the diameter of zone of inhibition against the tested bacterial pathogens. (Shinde A.B *et al*.2015) [15]

Result and Discussion

Phytochemical analysis

Qualitative phytochemical analysis of Acetone extract

According to the results of the Qualitative study, phytochemicals were found in the Acetone extract of all five medicinal plant stem barks and leaves. Table-1 clearly shows the presence of phytochemicals in stem bark. *Manilkara zapota* Stem Bark contains alkaloids, carbohydrates, tannins, terpenoids, flavonoids, and steroids. *Manilkara hexandra* Stem Bark contains Alkaloid, Carbohydrate, Glycoside, Tannin, Terpenoid, Flavonoid, and Steroid.

Mangifera indica stem bark contains carbohydrate, protein, tannin, terpenoid, and steroid. *Madhuka indica* Stem Bark contains flavonoid, glycoside, and steroid. Annona squamosa Stem Bark contains alkaloids, glycosides, and tannins.

Table 1: Phytochemical Constituents of the Acetone extract of Stem bark.

Name of Plants	Phytochemicals								
	Alkaloid	Carbohydrate	Protein	Glycoside	Tannin	Terpenoid	Saponin	Flavonoid	Steroid
M.zapota stem bark	+	+	-	-	+	+	-	+	+
M.hexandra stem bark	+	+	-	+	+	+	-	+	+
Mangifera indica stem bark	-	+	+	-	+	+	-	-	+
Madhuka indica stem bark	-	-	-	+	-	-	-	+	+
A. squamosa stem bark	+	-	-	+	+	-	-	-	-

+: - Present -: - Absent

According to Table 2 the leaves of *Manilkara zapota* contain alkaloid, carbohydrate, glycoside, and steroid. *Manilkara hexandra* leaves contain alkaloid, carbohydrate, protein, glycoside, saponin, and steroid. The leaves of *Mangifera indica* contain alkaloid, carbohydrate, protein, tannin, and saponin. *Madhuka indica* leaves contain alkaloids, tannins, and saponins. Annona squamosa leaves contain alkaloids, tannins, and saponins.

Table 2: Phytochemical Constituents of the Acetone extract of Leaves.

Name of Plants	Phytochemicals								
	Alkaloid	Carbohydrate	Protein	Glycoside	Tannin	Terpenoid	Saponin	Flavonoid	Steroid
M.zapota Leaves	+	+	-	+	-	-	-	-	+
M.hexandra Leaves	+	+	+	+	-	-	+	-	+
Mangifera indica Leaves	+	+	+	-	+	-	+	-	-
Madhuka indica Leaves	+	-	-	-	+	-	+	-	-
A. squamosa Leaves	+	-	-	-	+	-	+	-	-

Qualitative phytochemical analysis of aqueous extract

The presence of phytochemicals was discovered in the Aqueous extract of all five medicinal plants (stems, bark, and leaves) after a Qualitative examination. The presence of phytochemicals was clearly demonstrated in Table 3. Alkaloid, Carbohydrate, Protein, Tannin, Saponin, Flavonoid, and Steroid are all found in *Manilkara zapota* Stem Bark. Tannin, Saponin, Flavonoid, and Steroid are all found in *Manilkara hexandra* Stem Bark Protein. Protein, Tannin, Flavonoid, and Steroid are found in Mangifera indica Stem Bark. Tannin, Saponin, and Flavonoid are all present in *Madhuka indica* Stem Bark Protein. Tannin and flavonoid are detected in *Annona squamosa* Stem Bark Protein.

Table 3: Phytochemical Constituents of the Aqueous extract of Stem bark.

Name of Plants	Phytochemicals								
	Alkaloid	Carbohydrate	Protein	Glycoside	Tannin	Terpenoid	Saponin	Flavonoid	Steroid
M.zapota stem bark	+	+	+	-	+	-	+	+	+
M.hexandra stem bark	-	-	+	-	+	-	+	+	+
Mangifera indica stem bark	-	-	+	-	+	-	-	+	+
Madhuka indica stem bark	-	-	+	-	+	-	+	+	-
A. squamosa stem bark	-	-	+	-	+	-	-	+	-

+: - Present -: - Absent

Protein, Tannin, Saponin, Flavonoid, and Steroid were found in Manilkara zapota leaves, according to Table 4. Carbohydrate, Protein, Glycoside, Saponin, Flavonoid, and Steroid are all found in Manilkara hexandra leaves. Protein, Tannin, Saponin, Flavonoid, and Steroid are all found in Mangifera indica leaves. Glycoside, Tannin, Terpenoid, Saponin, and Flavonoid are all present in Madhuka indica leaves. Protein and Tannin are found in Annona squamosa leaves.

Table 4: Phytochemical Constituents of the Aqueous extract of Leaves.

Name of Plants	Phytochemicals								
	Alkaloid	Carbohydrate	Protein	Glycoside	Tannin	Terpenoid	Saponin	Flavonoid	Steroid
M.zapota Leaves	-	-	+	-	+	-	+	+	+
M.hexandra Leaves	-	+	+	+	-	-	+	+	+
Mangifera indica Leaves	-	-	+	-	+	-	+	+	+
Madhuka indica Leaves	-	-	-	+	+	+	+	+	-
A. squamosa Leaves	-	-	+	-	+	-	-	-	-

Antibacterial activity

Five plants like *Manilkara zapota, Manilkara hexandra, Mangifera indica, Madhuka indica, Annona squamosa* stem bark and leaves Acetone and Aqueous were used for Antibacterial activity against two Gram positive bacteria *Staphylococcus aureus, Bacillus subtilis* and two Gram negative bacteria *Escherichia coli, Salmonella enterica.* Culture dilution of bacteria is 10^6 CFU/ml. Spreading of culture on petri dish 100µl of 10^6 CFU/ml. Petri dish keep for incubation at 37℃ for 24 hours. After 24 hours zone of inhibition major in mm.

Staphylococcus aureus

On the basis of Table 5 the test organism *Staphylococcus aureus* was effectively inhibited by three plant extracts viz. Aqueous extract of *Manilkara hexandra* leaf, *Manilkara hexandra* stem bark and *Manilkara zapota* stem bark with zone diameter 14mm,12mm and 13mm respectively. *Manilkara hexandra* leaf aqueous extract showed 14mm zone of inhibition which was higher than the inhibition by test antibiotic Ampicillin inhibitory zone diameter 13mm. The Aqueous extract of *Manilkara zapota* stem bark showed the best zone of inhibition 13mm which was equivalent to the test antibiotic Ampicillin against *S. aureus.* The Aqueous extract of *Manilkara hexandra* stem bark showed 12mm zone of inhibition which was less than the test antibiotic Ampicillin. While none of the other plant extract showed any inhibition zone.

The Acetone extract of leaf of *Annona squamosa* and *Manilkara hexandra* stem bark showed the best zone of inhibition 13mm which was equivalent to the test antibiotic Ampicillin against *S. aureus*. Acetone extract of *Manilkara hexandra* leaves showed 12mm zone of inhibition which was less than the Ampicillin (13mm). While another three plants *Annona squamosa* stem bark, *Madhuka indica* stem bark and *Mangifera indica* stem bark showed zone of inhibition 11mm which was less than the other plant extract showed any inhibition zone.

Table 5: Anti-bacterial activity against *Staphylococcus aureus* bacteria.

Sr. No.	Plant Name	Solvent for Extraction	Zone of inhibition in mm	
			Sample	Ampicillin
1	*Annona squamosa* Leaves	Aqueous	00	13
2	*Annona squamosa* Stem bark		00	
3	*Manilkara hexandra* Leaves		14	
4	*Manilkara hexandra* Stem bark		12	
5	*Manilkara zapota* Leaves		00	
6	*Manilkara zapota* Stem bark		13	
7	*Madhuka indica* Leaves		00	
8	*Madhuka indica* Stem bark		00	
9	*Mangifera indica* Leaves		00	
10	*Mangifera indica* Stem bark		00	
11	*Annona squamosa* Leaves	Acetone	13	13
12	*Annona squamosa* Stem bark		11	
13	*Manilkara hexandra* Leaves		12	
14	*Manilkara hexandra* Stem bark		13	
15	*Manilkara zapota* Leaves		00	
16	*Manilkara zapota* Stem bark		00	
17	*Madhuka indica* Leaves		00	
18	*Madhuka indica* Stem bark		11	
19	*Mangifera indica* Leaves		00	
20	*Mangifera indica* Stem bark		11	

Bacillus subtilis

On the basis of Table 6 the Aqueous extract of *Manilkara hexandra* Leaves and Stem bark showed the zone of inhibition 11mm and 12mm respectively which was very lesser than the inhibition by Ampicillin inhibitory zone 25mm against *Bacillus subtilis*. While none of the other plant extract showed any inhibition. The Acetone extract of *Annona squamosa* Leaves and Stem bark showed the zone of inhibition 11mm respectively which was very lower than the inhibition by Ampicillin inhibitory zone 21mm. While none of the other plant extract showed any inhibition.

Table 6: Anti-bacterial activity against *Bacillus subtilis* bacteria.

Sr. No.	Plant Name	Solvent for Extraction	Zone of inhibition in mm	
			Sample	Ampicillin
1	*Annona squamosa* Leaves	Aqueous	00	25
2	*Annona squamosa* Stem bark		00	
3	*Manilkara hexandra* Leaves		11	
4	*Manilkara hexandra* Stem bark		12	
5	*Manilkara zapota* Leaves		00	
6	*Manilkara zapota* Stem bark		00	
7	*Madhuka indica* Leaves		00	
8	*Madhuka indica* Stem bark		00	
9	*Mangifera indica* Leaves		00	
10	*Mangifera indica* Stem bark		00	
11	*Annona squamosa* Leaves	Acetone	11	21
12	*Annona squamosa* Stem bark		11	
13	*Manilkara hexandra* Leaves		00	
14	*Manilkara hexandra* Stem bark		00	
15	*Manilkara zapota* Leaves		00	
16	*Manilkara zapota* Stem bark		00	
17	*Madhuka indica* Leaves		00	
18	*Madhuka indica* Stem bark		00	
19	*Mangifera indica* Leaves		00	
20	*Mangifera indica* Stem bark		00	

Escherichia coli

Table 7 revealed that Aqueous extract of *Mangifera indica* Leaf showed the best zone of inhibition(16mm) which was lower than the inhibition by Ampicillin inhibitory zone diameter 21mm against *E-coli*. While another plant extract showed none of the inhibition. Acetone extract of *Annona squamosa* leaf, *Manilkara hexandra* Leaf, *Manilkara zapota* Leaf, *Manilkara zapota* Stem bark showed the zone of inhibition 12mm, 11mm, 14mm respectively which was lesser than the inhibition by Ampicillin inhibitory zone diameter 21mm against *E-coli*. Whereas other plants not showed any zone of inhibition.

Table 7: Anti-bacterial activity against *Escherichia coli* bacteria.

Sr. No.	Plant Name	Solvent for Extraction	Zone of inhibition in mm	
			Sample	Ampicillin
1	*Annona squamosa* Leaves	Aqueous	00	21
2	*Annona squamosa* Stem bark		00	
3	*Manilkara hexandra* Leaves		00	
4	*Manilkara hexandra* Stem bark		00	
5	*Manilkara zapota* Leaves		00	
6	*Manilkara zapota* Stem bark		00	
7	*Madhuka indica* Leaves		00	
8	*Madhuka indica* Stem bark		00	
9	*Mangifera indica* Leaves		16	
10	*Mangifera indica* Stem bark		00	
11	*Annona squamosa* Leaves	Acetone	12	21
12	*Annona squamosa* Stem bark		15	
13	*Manilkara hexandra* Leaves		11	
14	*Manilkara hexandra* Stem bark		00	
15	*Manilkara zapota* Leaves		11	
16	*Manilkara zapota* Stem bark		14	
17	*Madhuka indica* Leaves		00	
18	*Madhuka indica* Stem bark		12	
19	*Mangifera indica* Leaves		00	
20	*Mangifera indica* Stem bark		00	

Salmonella enterica

Table 8 revealed that the organic extract of the sample plant species of *Mangifera indica* Stem bark highly effective in inhibiting the growth of test organism *Salmonella enterica* the Acetone and Aqueous extract had zone size of 11mm. The aqueous extract of *Manilkara hexandra* Leaf and *Mangifera indica* Stem bark showed the zone of inhibition 12mm and 11mm respectively which was lesser than the

inhibition by Ampicillin inhibitory zone diameter 21mm against *S. enterica* test organism. While another plant extract showed none of the inhibition.

Acetone extract of *Manilkara zapota* stem bark, *Madhuka indica* stem bark and *Mangifera indica* showed the zone of inhibition 11mm respectively which was very less than the antibiotic Ampicillin inhibitory zone 21mm. while the other plant extract not seen inhibition at all.

Table 8: Anti-bacterial activity against *Salmonella enterica* bacteria.

Sr. No.	Plant Name	Solvent for Extraction	Zone of inhibition in mm	
			Sample	Ampicillin
1	*Annona squamosa* Leaves	Aqueous	00	21
2	*Annona squamosa* Stem bark		00	
3	*Manilkara hexandra* Leaves		12	
4	*Manilkara hexandra* Stem bark		00	
5	*Manilkara zapota* Leaves		00	
6	*Manilkara zapota* Stem bark		00	
7	*Madhuka indica* Leaves		00	
8	*Madhuka indica* Stem bark		00	
9	*Mangifera indica* Leaves		00	
10	*Mangifera indica* Stem bark		11	
11	*Annona squamosa* Leaves	Acetone	00	21
12	*Annona squamosa* Stem bark		00	
13	*Manilkara hexandra* Leaves		00	
14	*Manilkara hexandra* Stem bark		00	
15	*Manilkara zapota* Leaves		00	
16	*Manilkara zapota* Stem bark		11	
17	*Madhuka indica* Leaves		00	
18	*Madhuka indica* Stem bark		11	
19	*Mangifera indica* Leaves		00	
20	*Mangifera indica* Stem bark		11	

Conclusion

This research demonstrates five plant stem bark and leaves Phyto chemical analysis and Antibacterial activity. In the phytochemical analysis on the basis of solvent and plant part phytochemical present or absent. In Acetone extract highest number of phytochemical present compare to Aqueous extract. In Antibacterial activity *Manilkara hexandra* Leaves and *Manilkara zapota* stem bark Aqueous extract found best zone of inhibition against *S. aureus* bacteria. *Annona squamosa* leaves and *Manilkara hexandra* stem bark Acetone extract showed the best zone of inhibition against *S. aureus*. In *Bacillus subtilis* no well inhibition zone found at all. *Mangifera indica* leaves Aqueous extract and *Annona squamosa* stem bark Acetone extract showed best zone of inhibition against *Escherichia coli.* In *Salmonella enterica* little zone of inhibition found. Five plants stem bark and leaves Acetone and Aqueous extract are effective against *S. aureus* and *E. coli* bacteria.

Acknowledgement

Author thankful to Guide Dr. Charuben.V for their guidance during this work and also thankful to Disha life sciences PVT. Ltd. For practical work during this study. I also sincerely express my gratitude to M.F. Mansuri sir, Lecturer in Microbiology in Science College, Talod and Dr. Rajendrasinh Solanki whose help in Antibacterial activity during this Research Work.

References

1. Amenu Desalegn, Antimicrobial activity of medicinal plant extracts and their synergistic effect on some selected pathogens. American journal of Ethnomedicine,2014:1(1):18-29.
2. Kodangala C, Saha S, Kodangala P. Phytochemical studies on aerial parts of the plant Leucas lavandulaefolia. Der pharma Chemica,2010:2(5):434-437.
3. Dabur R, Gupta A, Mandal TK, Singh DD, Bajpai V *et al*, Antimicrobial activity of some Indian medicinal plants. Afr.J.Trad.CAM,2007:4(3):313-318.
4. Das k, Tiwan RKS, Shivasteva DK. Techniques for Evaluation of Medicinal plant products as Anti-microbial agent: current methods and future Trends. Journal of Medicinal plants Research,2010:4:104-111.
5. K Girija, P Udaya Chandrika, K Lakshman, N Pruthvi. Evaluation of Antimicrobial activity of various bark extracts of *Bombax malabaricum*, Int.J.Res.Pharm.Sci,2010:1(2):199-204.
6. Kaur GJ, Arora DS. Antibacterial activity and Phytochemical screening of *Anethum graveolens*, *Foeniculum vulgare* and *Trachyospermum ammi*. BMC Complement Altern Med,2009:9:30.
7. Abu Osman M, Abdul Aziz M, Rowshanul Habib M, Rezaul Karim M. Antimicrobial investigation of *Manilkara zapota* (L.) P. Royen. Int.J. Drug.Dev and Res,2011:3(1):185-190.
8. Ashraful Alam M, Rowshanul Habib M, Farjana Nikkon, Matiar Rahman, Rezaul Karim M. Antimicrobial activity of Akanda (*Calotropis gigantea* L.) on some Pathogenic bacteria. Bangladesh.J. of Scientific and Industrial research,2008:43(3):397-404.
9. Mahesh B, Satish S. Antimicrobial activity of some important Medicinal Plant against Plant and Human pathogen. World Journal of Agricultural sciences,2008:4(5):839-843.
10. Mewara D, Tamakuwala H, Desai B. Antifungal activity and Phytochemical screening from Leaf extract of *Manilkara zapota* and *Averrhoa carambola*, BMR Phytomedicine,2017:3(1):1-9.

11. Nasrullah, Suliman, Rahman K, Ikram M, Nisar M *et al*. Screening of Antibacterial activity of medicinal plants. Int. J. Pharm. Sci. Rev. Res,2012:14(2):25-29.
12. Ncube NS, Afolayan AJ, Okoh AT. Assessment Techniques of Anti-microbial properties of natural compounds of plant origin: current methods and Future Trends. Africa Journal of Biotechnology,2008:7(12):1797-1806.
13. Prabhavathi RM, Prasad MP, Jayaramu M. Studies on Qualitative and Quantitative Phytochemical analysis of Cissus quadrangularis. Advances in Applied science Research,2016:7(4):11-17.
14. Razmavar S, Abdulla MA, Ismail SB, Hussandarvish P. Antibacterial activity of Leaf extracts of *Bacckea frutescens* against Methicillin Resistant *Staphylococcus aureus,* 2014, 5.
15. Shinde AB, Mulay YR. Phytochemical Analysis and Antibacterial properties of some selected Indian medicinal plants. Int. J. Curr. Microbiol. App. Sci,2015:4(3):228-235.
16. Shrinivasan D, Nathan S, Suresh T, Lakshamana Perumalsamy P. Antimicrobial activity of certain Indian Medicinal Plants used in folkloric medicine, J. Ethnopharmacol,2001:74(3):217-220.
17. Silva APS. Nascimento da Silva LC, Martins da Fonseca CS, Araujo JM, Correia MTS, Cavalcanti MS and Lima VLM, Antimicrobial activity and Phytochemical analysis of organic extracts from *Cleome spinosa* Jaqc. Front. Microbiol,2016:7:963.
18. Singh Pooja, Goel Alka, Sehgal Manvika, Phytochemical analysis and antimicrobial activity of *Madhuka longifolia* and *Clerodendrum infortunatum:* Medicinal plants for applications as textile finishes. International journal of chemical studies,2018:6(5):2031-2040.
19. Uthayarasa K, Pathmanathan K, Jayadevan, Jeyaratnam, Jeyaselan, Emmanuel, Antibacterial activity and Qualitative phytochemical analysis of medicinal plants extracts obtained by sequential extraction method. International journal of Integrative biology,2010:10(2):76-81.
20. Zahid M, Mujahid M, Singh P, Farooqui S, Singh K, Shahla P *et al*. (Custard apple): An Aromatic Medicinal Plant Fruit with immense nutraceutical and therapeutic potentials, 2019, IJPSR.