© 2017 IJSRST | Volume 3 | Issue 8 | Print ISSN: 2395-6011 | Online ISSN: 2395-602X
Themed Section: Science and Technology

Cynodon Dactylon (L.) Pers., Cow Dung, and Selected Plant Extracts Exhibit Antimicrobial Property Against Cariogenic Streptococcus Species

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ABSTRACT

This study was carried out with an objective to access the hidden specific antimicrobial property of Cynodon dactylon (L.)Pers., Cow dung powder, Leaves of Achyranthes Aspera, Wheat and Rice plant extracts against pathogenic strain isolated from dental plaque of caries active and caries free mouth from total 500 subjects. In this study we examined and compared the effect of extracts from different selected sources. Extraction done by using solvent like ethanol, chloroform, methanol and water. The efficiency of extracts was studied and determined by applying different extract concentration onto the cultured bacteria strain using the disc diffusion method. Streptococcus sanguis and Streptococcus mitis were the most susceptible bacteria to all plant extracts as compared to S.mutans and Enterococci. The extracts showed significant activity against the investigated dental plaque strains, which is promising.

Keywords: Selected Extracts, Organic Solvents, Streptococcus, Antimicrobial Activity.

I. INTRODUCTION

For control of micro infection and disease various synthetic drugs and chemical formation are currently in use but due to the problem of microbial drug resistance, new alternative synthetic drugs have been explored . Oral disease at present is a major health issue worldwide [1]. Microbial resistance to most of the antibiotic commonly used to treat oral infection (penicillin , cephalosporin, erythromycin , tetracycline, and derivatives and metronidazole) has been documented[3].The resistance of microorganism against the traditional antibiotics needs urgent attention for the development of the new drugs molecules.

Cowdung is basically the reject of herbivores matter which is acted upon by symbiotic bacteria residing within the antimicrobial rumen. The resultant faced mattern is rich in minerals. Cow dung is comprised of organic matter including fibrous material that passed through the cow digestive system among other liquid digesta that has been left after the fermentation, absorption and filtration , then acidification , then absorbed again. Cowdung chemically composed of mostly Carbon,Nitrogen, Hydrogen, oxygen phosphorous etc. with salts,urea,mucus,as well as cellulose ,lignin and hemicellulose cow dung along with this essential minerals and substance they contain microflora like bacilli, lactobacilli and cocci.[5].

Cynadondactylon (L.) Peers is a type of perennial grass that possess great medicinal values in this study the antimicrobial active of the plant extract was investigated against *streptococcus* ` in developing country low income people such as farmer people of small isolate village and native communities use folk medicine for the treatment of common infection these plants are ingested as decoctions, teas and juice predation to treat respiration infections [1].

Achyranthes Aspera L.(family : Amaranthaceae), an erect and much branched diffuse herb is a medicinal plant, frequently found in tropical and warmer region as weed. Another important plant like rice and wheat plant they carry a huge incredible health beneficiary property . Wheat is the most common cereal available all over the world and is a even higher demand in recent years due to its abundant health benefits. Research has already proven that wheat is extremely beneficial for healthy living. It considered lower the heart disease, owing to its

comparatively low fat content. It also regulates the blood glucose level in diabetics. As potent immune stimulating plant nature has been a source of medicinal agents for thousands of years of an impressive No. of modern drugs have been isolated from natural sources App 25% of drugs in modern pharmacopoeia were derived from plants and many others were synthetic analogues built on prototype compound isolated from plants. Infectious disease are the world's leading course of premature death[3]. Therefore, there is a continuous and urgent need to investigate new antimicrobial compounds with diverse chemical structures and novel mechanisms of action. Medicinal plants represent a rich source antimicrobial agents plants are medicinally in different countries and are source of many potent and powerful drugs [3,4,5].

The activity of natural products especially essential oil against microorganism has been recently confirmed by several studies focusing on antimicrobial activity of essential oil against planktonic cell however bacteria growing in biofilm exhibit a specific phenotypic and are often but not always more resistant to antimicrobial agents then their planktonic counterpart [10,11].

Thus it is important to search for natural products that have antibiotic property and antimicrobial activity against oral pathogen especially *streptococcus* species isolated as cariogenic strains from dental plaque biofilm.

II. Material and methods

Collection of specimen

In this study extracts of cow dung , cynadon dactylon (L.) Pers is a type of perennial grass, leaf of Achyranthes Aspera L.(family : Amaranthaceae),wheat and rice plant were assayed for there antimicrobial property against streptococcus strains isolated from dental plaque sample. The above mentioned species of plant and cow dung sample were collected from kachigam village in Daman and Diu (U.T) area.

Prepatration of cow dung extract

2000 g of cow dung from indian desi breed cow from (kachigam) village farm daman(U.T) was collected and shadow dreied for 6 days. The moisture content of the cow dung was lower than the other type.The dried cow dung was powdered, the powdered material had a net weight of 600gm.

Preparation of cow dung extract using organic solvent

Preparation using organic solvent : 10 gm of cow dung powder added to 100 ml each of chloroform, ethanol and methanol (organic solvent)in a conical flask and kept in rotator shaker for 3-days.The extract was then filtered using watsman No-1 filter and stored in a vial for future use.

Prepation of cow dung crude extract

Fresh cow dung was collected containg moisture within,grinded to obtain homogenous texture filtered through watsman filter paper no.1, their filterate were then used for antimicrobial sensitivity.

Further prepation of Plant extract of wheat and rice plant, leaf extract of AchyranthesAspera L.(family : Amaranthaceae), and cynadondaclylon (L.) Pers . plant extract of these seelcted family of plant and grass carried out in following way:

1) Prearation of crude extract of plant and grass
   All the fresh plant part and grss were collected and grinded finely in a grinder to obtain a homogenous texture and filtered through watsman filter paper No.1 their filterete were then used for antimicrobial sensitivity.
2) Preparation using organic solvent
   Successive extraction of plant part and grass powder was done by adding 100 ml of organic solvent to 10 gm of powder prepared from selected plant and grass in a conical flask and it was kept in a rotary shaker for 3 –days. The extract was then filtered using watsman No.1 filter paper and stored in a vial for future use.

III. Microorganisms

Collection of strains

Reference bacterial strains were obtained from dental plaque biofilm collected and cultured for strain isolation from 500 different subjects- male, female and children of cries active and cries free mouth.

Preparation of disc containing extracts

For detecting the antimicrobial activity of obtain extracts of selected species the empty disc were impregnated

with 50 µ /disc of each chloroform, ethanol, methanol and crude extracts of cow dung, Achyranthes Aspera L., Cynodon dactylon (L.) Pers, wheat and rice plant [15].

Antibiotic sensitivity test

Kirby-Bauer method also know as disc diffusion antibiotic sensitivity testing is a test which uses antibiotic –impregnated wafers to test whether particular bacteria are susceptible to specific antibiotics. It is based on the observation that the degree of inhibition of bacterial growth on agar medium surrounding an antimicrobial compound containing disc correlates with susceptibility to the agent. The zone of inhibition determines whether the organism is sensitive, resistant or intermediate to a particular antibiotic or the antimicrobial compound.

Identified colonies from pure culture plates were transferred into the nutrient broth and incubated at 37°C for 24 hrs. To determine the antimicrobial sensitivity the inoculums was spread on the entire surface of the muller-Hinton agar plates with the sterile cotton swab.
The commercially available antibiotic disc and one disc containing the antimicrobial compound were gently pressed onto the microbe carpeted plate at an appropriate distance from each other and from the edge of plate.

The diameter of the zone of bacterial growth inhibition around each disc was measured and the susceptibility or resistance to the agent in each disc was determined according to the standardized table provided by the Hi-media Laboratories, Mumbai. Antibiotic used were Amoxicillin and Azithromycin [6].

MIC Determination

The minimum inhibitory concentrations (MIC) were performed by tube (dilutio) method used to determine Minimal Inhibitory Concentration (MIC). Muller Hinton broth used in this procedure of MIC detection. MIC expressed as micrograms per mililitre (µg/ml) [5].

Phytochemical Screening of extracts

Crude extracts of selected species and cow dung were used for phytochemical screening [12,15].

Test for flavonoids

Lead acetate test

Five hundred milligram of sample was dissolved in 5 ml of ethanol, slightly warmed and then filtered. Few pices of magnesium chips were added to the filtrate followed by addition of few drops of conc. HCL A pink , orange, or red to purple.Coloration was taken as a confirmation for the presence of flavonoids (Trease and Evnas,2002).

Test for Saponins

One gram of powdered sample was boiled in 10 ml of distilled water and then filtered. 3 ml of distilled water was added to filtrate and shaken vigorously for about 5 min formation of foam after shaking was taken as a confirmation for the presence of saponin (Sofowora,1993).

Test for tannins

500mg of powdered sample was mixed with 10 ml of distilled water and then filtered followed by the addition of few drops of 1% ferric chloride solution. Occurrence of a blue-black, green or blue-green precipitate indicates the presence of tannins (Trease and Evans,2002)

Test for Alkaloids

100 mg of powdered sample was dissolved in 5 ml of methanol and then filtered. Then 2 ml of filtrate was mixed with 5 ml of 1% aqueous HCL. One million of mixture of was taken separately in two test tubes. Few drops of Dragendorff"reagent were added in one tube and occurrence of orange –red precipitate was taken as positive . to the second tube Mayer`s reagent was added and appearance of buff-colored precipitate was taken as positive test for the presence of alkaloids (Sofowora,1993).

Test for phenols

A small quantity of the extracts was dissolved in 0.5 ml of 20% Sulphuric acid solution . Followed by addition of a few drops of 2% Sodium hydroxide solution , it turned blue in the presence of phenols.

Test for glycosides

Small amount of extract was dissolved in 1 ml of water, and then aqueous 10% of sodium hydroxide solution was added. Formation of yellow color indicated presence of glycosides.

Test for Amino acids	Biuret Test (Gahan,1984) , Millon's Test (Rasch and Swift,1960).

IV. RESULT AND DISCUSSION

Table 1. Photochemical analysis of Cow Dung extract.

Extracts	Constituents						
	Tannins	Alkaloids	Glycosids	Saponins	Phenols	Flavonoids	Amino acids
Chloroform.E	+	+	+	+	+	-	-
Ethanol.E	+	+	+	+	+	+	+
Methanol.E	+	+	+	+	+	+	+
Crude.E	+	+	-	+	-	+	+

Table 2. Photochemical analysis of Cynodon dactylon extract

Extracts	Constituents						
	Tannins	Alkaloids	Glycosids	Saponins	Phenols	Flavonoids	Amino acids
Chloroform.E	+	+	+	+	+	+	+
Ethanol.E	+	+	+	+	+	+	+
Methanol.E	+	+	+	-	+	+	+
Crude.E	+	+	-	+	-	+	+

Table 3. Photochemical analysis of Achyranthes Aspera leaf

Extracts	Constituents						
	Tannins	Alkaloids	Glycosids	Saponins	Phenols	Flavonoids	Amino Acid
Chloroform.E	+	+	-	+	+	+	+
Ethanol.E	+	+	+	+	+	+	+
Methanol.E	+	-	-	-	-	+	+
Crude.E	+	-	-	+	-	-	+

Table 4. Photochemical analysis of Rice plant

Extracts	Constituents						
	Tannins	Alkaloids	Glycosids	Saponins	Phenols	Flavonoids	Amino Acid
Chloroform.E	-	+	+	-	+	+	+
Ethanol.E	+	+	+	+	+	+	+
Methanol.E	+	+	-	+	-	+	+
Aqueous.E	+	+	-	+	-	+	+

Table 5. Photochemical analysis Wheat Plant

Extracts	Constituents						
	Tannins	Alkaloids	Glycosids	Saponins	Phenols	Flavonoids	Amino Acid
Chloroform.E	-	-	+	-	+	+	+
Ethanol.E	+	+	+	+	+	+	+
Methanol.E	+	+	-	+	-	+	+
Aqueous.E	+	+	-	+	-	+	+

Phytochemical analysis of selected plant species and cow dung is shown in Table 1,2,3,4 and 5 respectivly. Saponin and Tannins were found in all solvent extract but absent in chloroform of wheat and paddy extract, even found absent in methanolic extract of Achyranthes Aspera.

Alkaloids were found in cow-dung extract prepared in all four selected solvents , but were found absent in methanol and crude extract of Achyranthes Aspera. In Cynodon dactylon flavonoids were detected in all solvent extract. In paddy and wheat flavonoid were absent in chloroform extract of wheat.
Flavonoids were found in all four extract of cow dung. In Cynodon dactylon flavonoids were found in ethanol extract . In Achyranthes Aspera flavonoids present in all solvent extracts but absent in crude extract. In paddy and wheat extracts flavonoids were found in all solvent except chloroform.

Phenols were found in methanol and ethanol extract of cow dung. In methanol and crude extracts of Cynodon dactylon and Achyranthes Aspera phenols were found absent. In paddy and wheat extract phenols were present in all extracts accept Chloroform extract .

Amino acids were detected in all selected plant species and cow dung extracts. The constituent obtained in this phytochemical analysis varied with solvent used for extraction.

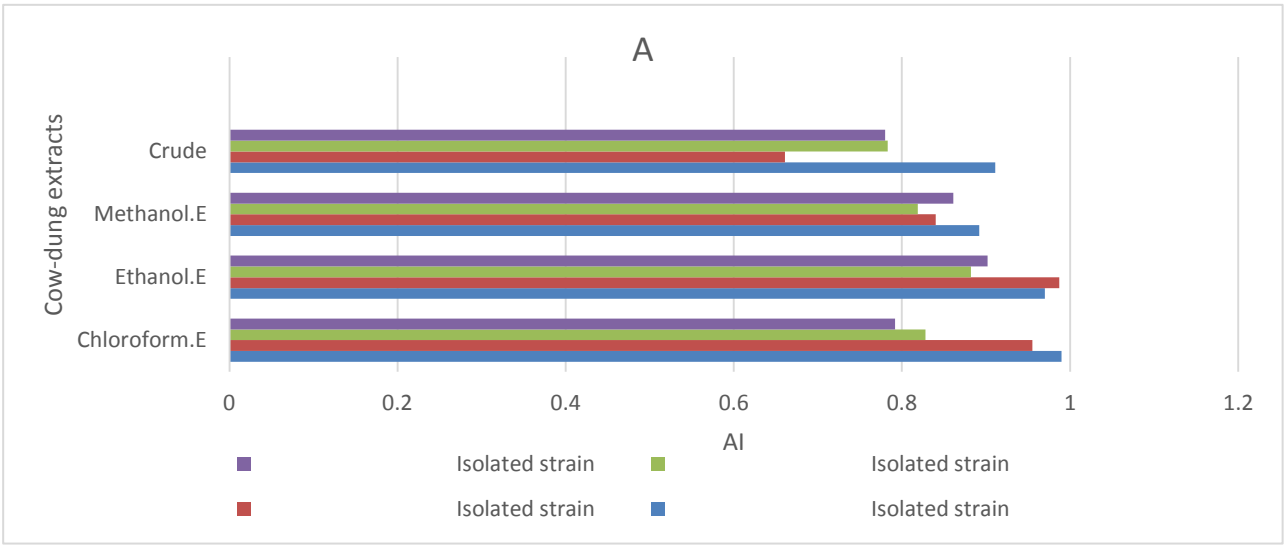
Antimicrobial activity of extracts

Table 6. Antimicrobial activity (Zone of inhibition,mm) of various plant extracts of Cow Dung against dental pathogens.

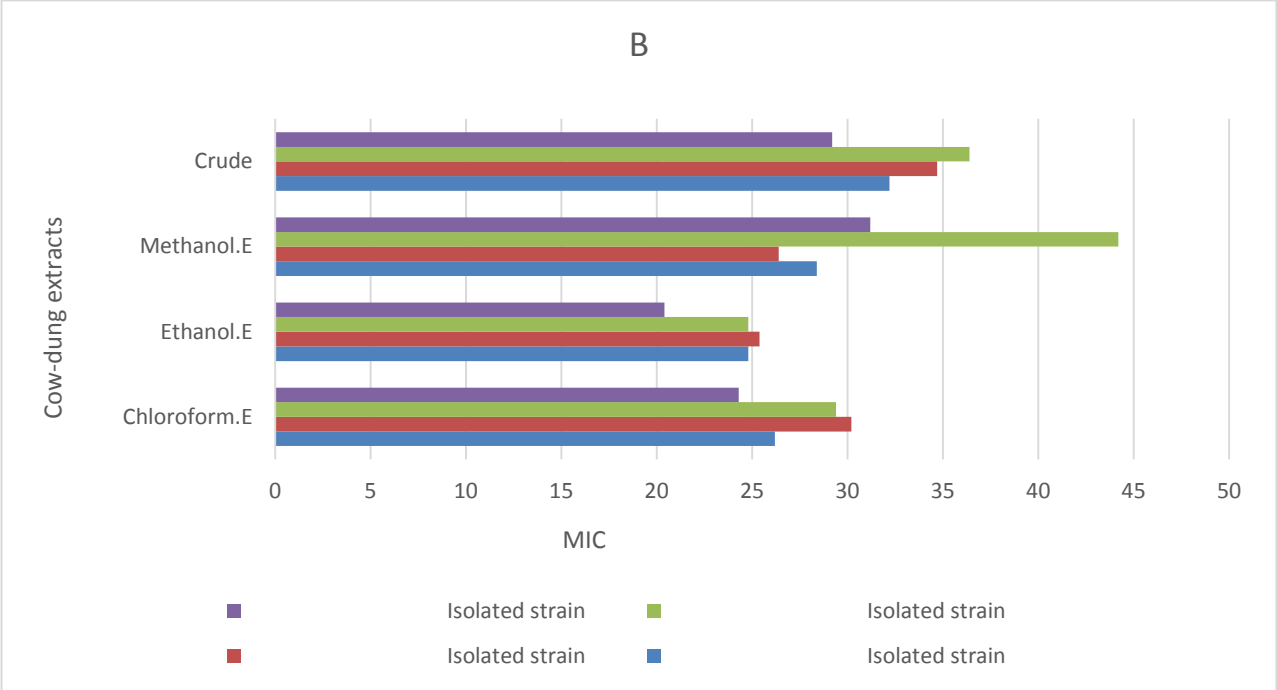
Extracts of cow-dung	Isolated strain							
	S.mutans		S.sanguis		S.mitis		Enterococci	
	IZ	AI	IZ	AI	IZ	AI	IZ	AI
Chloroform.E	20.2± 0.32	0.990	23.4± 0.50	0.955	18.4± 0.91	O.828	19.5± 0.94	0.792
Ethanol.E	19.8± 0.40	0.970	24.2± 0.64	0.987	19.6± 0.74	0.882	22.2± 0.56	0.902
Methanol.E	18.2± 0.28	0.892	20.6± 0.44	0.840	18.2± 0.91	0.819	21.2± 0.67	0.861
Crude	18.6± 0.56	0.911	16.2± 0.56	0.661	17.4± 0.88	0.783	19.2± 0.64	0.780
Standard	20.4		24.5		22.2		24.6	

Table 7. MIC (µ/ml) performance of various plant extracts of Cow Dung against dental pathogens.

Extracts of cow-dung	Isolated strain			
	S.mutans	S.sanguis	S.mitis	Enterococci
Chloroform.E	26.2	30.2	29.4	24.3
Ethanol.E	24.8	25.4	24.8	20.4
Methanol.E	28.4	26.4	44.2	31.2
Crude	32.2	34.7	36.4	29.2



Graph A. Activation index against isolated dental plaque strains



Graph B. MIC against isolated dental plaque strains

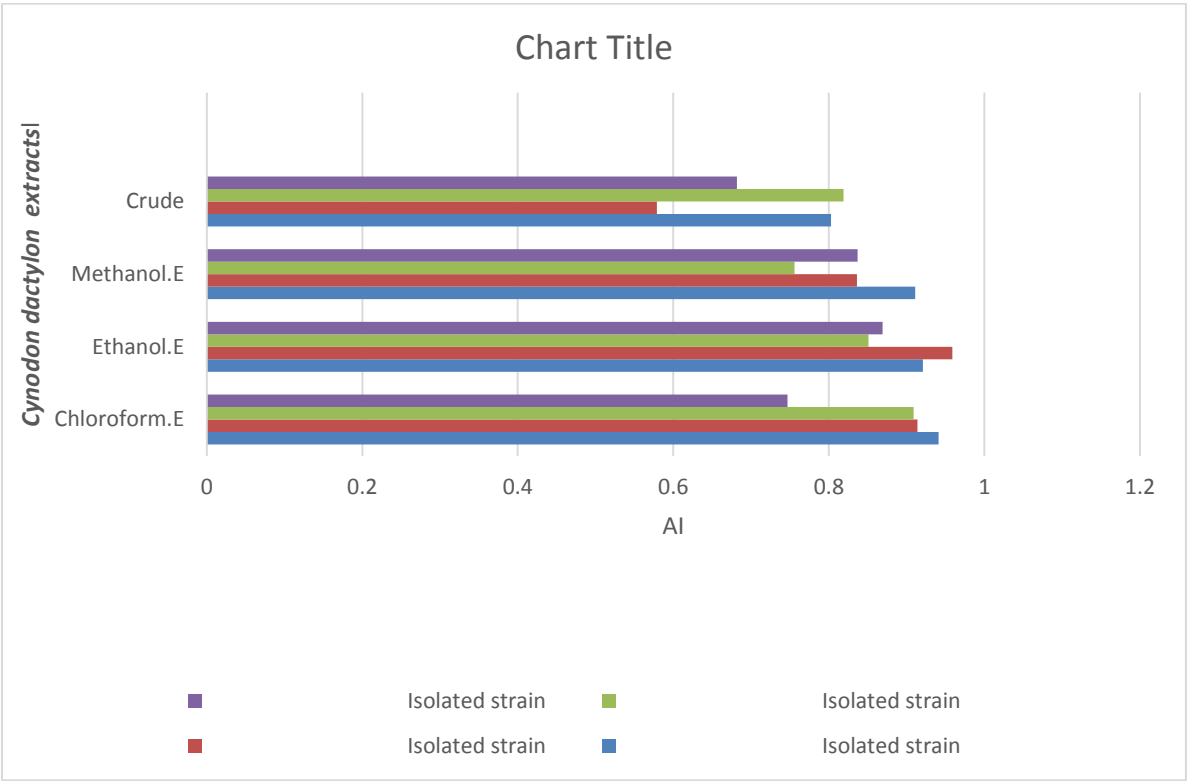
Graph 1. graph A and B showing comparative antimicrobial activity of different extracts of Cow-dung against dental plaque strains.

Table 8. Antimicrobial activity (Zone of inhibition,mm) of various plant extracts of Cynodon dactylon against dental pathogens.

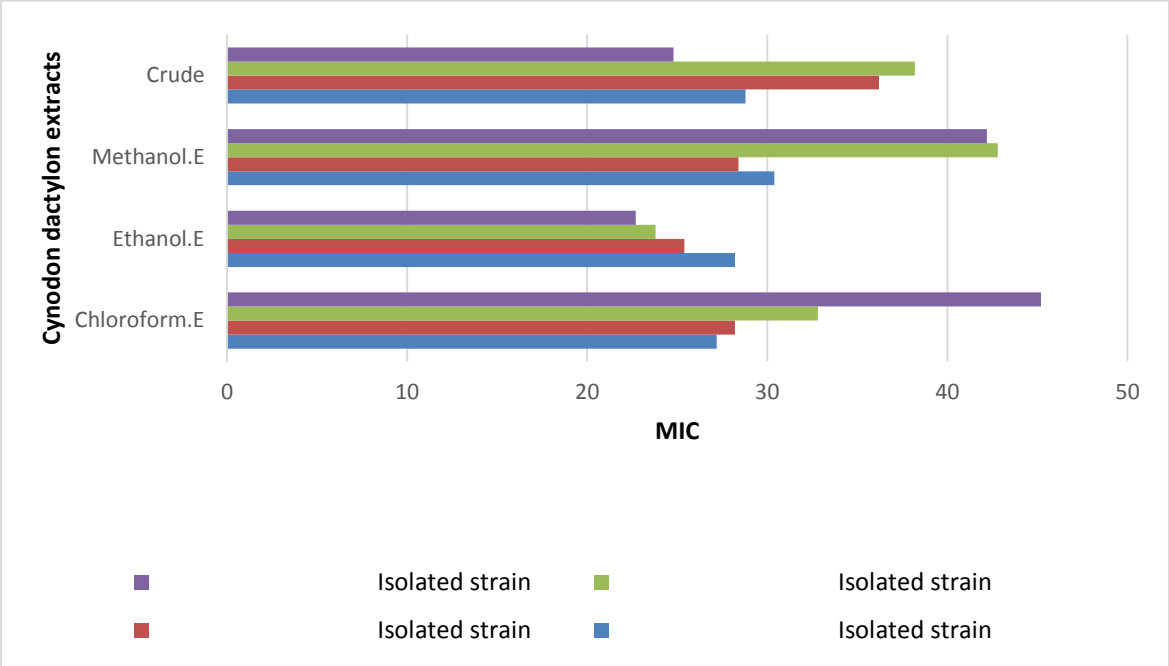
Extracts of Cynodon dactylon	Isolated strain							
	S.mutans		S.sanguis		S.mitis		Enterococci	
	IZ	AI	IZ	AI	IZ	AI	IZ	AI
Chloroform.E	19.2± 0.52	0.941	22.4± 0.63	0.914	20.2± 0.22	0.909	18.4± 0.28	0.747
Ethanol.E	18.8± 0.44	0.921	23.5± 0.18	0.959	18.9± 0.32	0.851	21.4± 0.32	0.869
Methanol.E	18.6± 0.52	0.911	20.5± 0.53	0.836	16.8± 0.52	0.756	20.6± 0.61	0.837
Crude	16.4± 0.26	0.803	14.2± 0.72	0.579	18.2± 0.18	0.819	16.8± 0.53	0.682
Standard	20.4		24.5		22.2		24.6	

Table 9. MIC (µg/ml) performance of various plant extracts of Cynodon dactylon against dental pathogens.

Extracts Of Cynodondactylon	Isolated strain			
	S.mutans	S.sanguis	S.mitis	Enterococci
Chloroform.E	27.2	28.2	32.8	45.2
Ethanol.E	28.2	25.4	23.8	22.7
Methanol.E	30.4	28.4	42.8	42.2
Crude	28.8	36.2	38.2	24.8



Graph C. Activation index against isolated dental plaque strains.



Graph D. MIC against isolated dental plaque strains

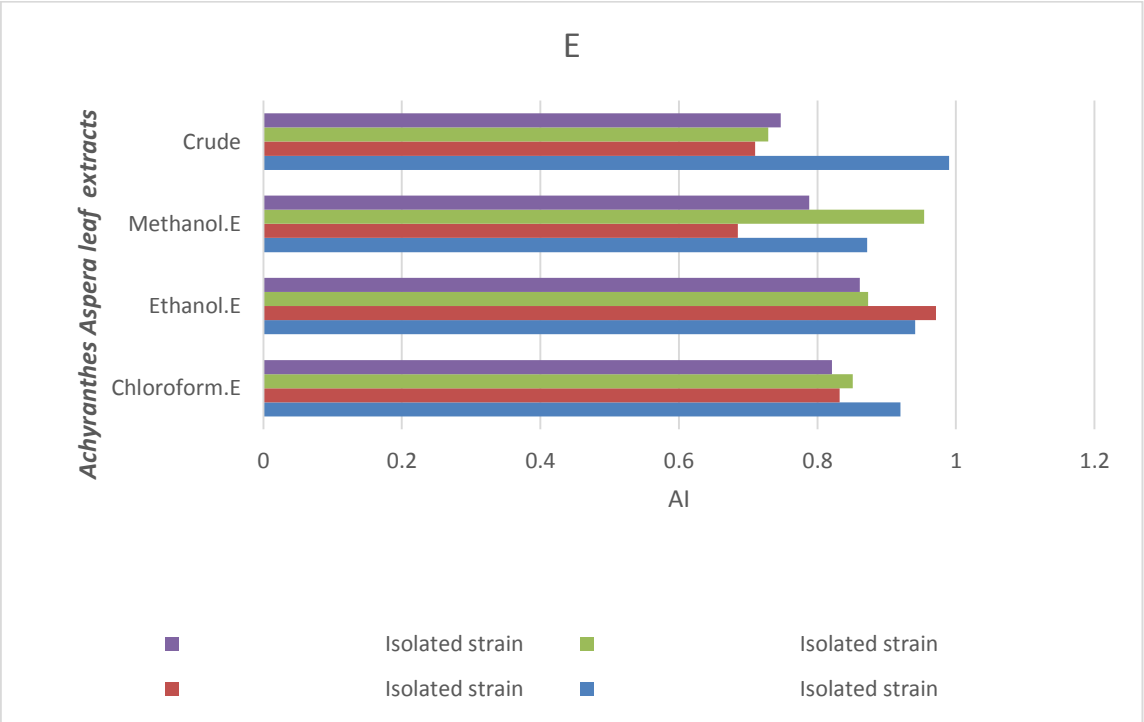
Graph 2. graph Cand D showing comparative antimicrobial activity of different extracts of Cynodon dactylon extracts against dental plaque strains.

Table 10. Antimicrobial activity (Zone of inhibition,mm) of various plant extracts of Achyranthes Aspera leaf aginst dental pathogens.

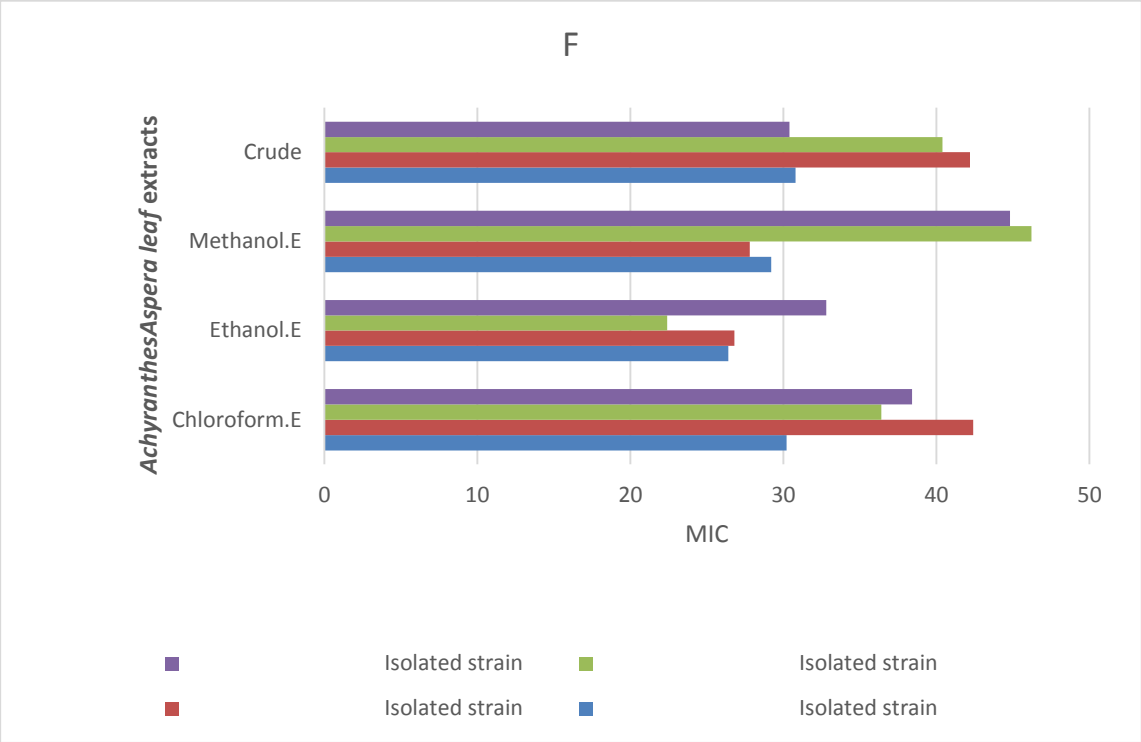
Extracts of Achyranthes Aspera leaf	Isolated strain							
	S.mutans		S.sanguis		S.mitis		Enterococci	
	IZ	AI	IZ	AI	IZ	AI	IZ	AI
Chloroform.E	18.8± 0.51	0.920	20.4± 0.51	0.832	18.9± 0.72	0.851	20.2± 0.21	0.821
Ethanol.E	19.2± 0.63	0.941	23.8± 0.42	0.971	19.4± 0.51	0.873	21.2± 0.61	0.861
Methanol.E	17.8± 0.22	0.872	16.8± 0.31	0.685	21.2± 0.53	0.954	19.4± 0.41	0.788
Crude	20.2± 0.15	0.990	17.4± 0.22	0.710	16.2± 0.31	0.729	18.4± 0.26	0.747
Standard	20.4		24.5		22.2		24.6	

Table 11. MIC activity (Zone of inhibition,mm) of various plant extracts of Achyranthes Aspera leaf against dental pathogens.

Extracts of AchyranthesAspera leaf	Isolated strain			
	S.mutans	S.sanguis	S.mitis	Enterococci
Chloroform.E	30.2	42.4	36.4	38.4
Ethanol.E	26.4	26.8	22.4	32.8
Methanol.E	29.2	27.8	46.2	44.8
Crude	30.8	42.2	40.4	30.4



Graph E. AI against isolated dental plaque strains



Graph F: MIC against isolated dental plaque strains

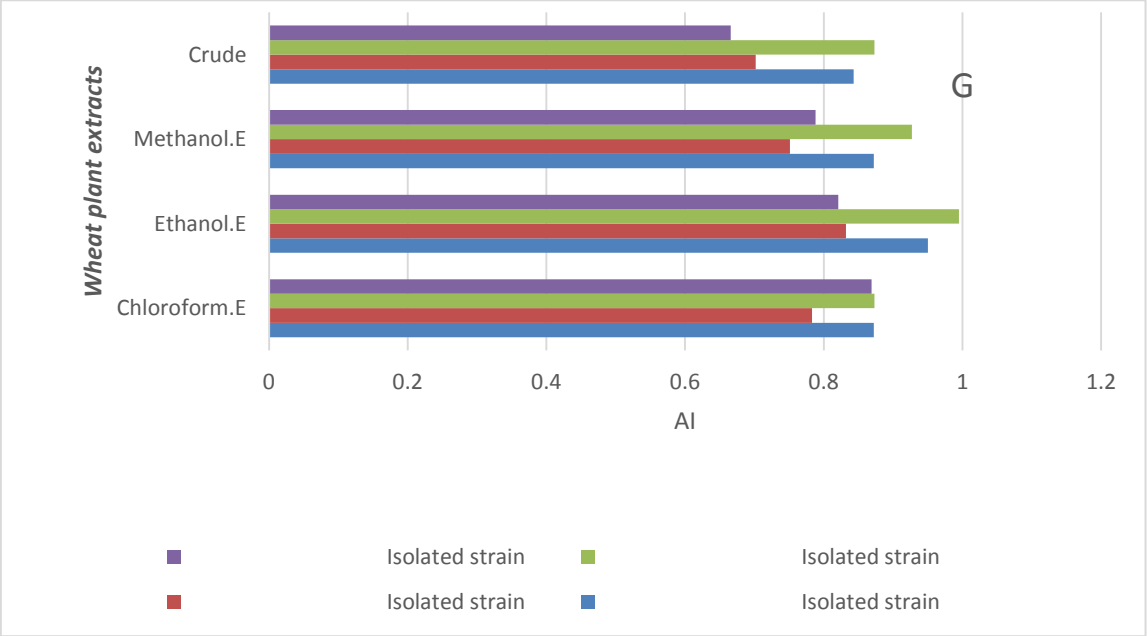
Graph 3. graph Eand F showing comparative antimicrobial activity of different extracts of AchyranthesAspera leaf extracts against dental plaque strains.

Table 12. Antimicrobial activity (Zone of inhibition,mm) of various extracts of wheat plant against dental pathogens.

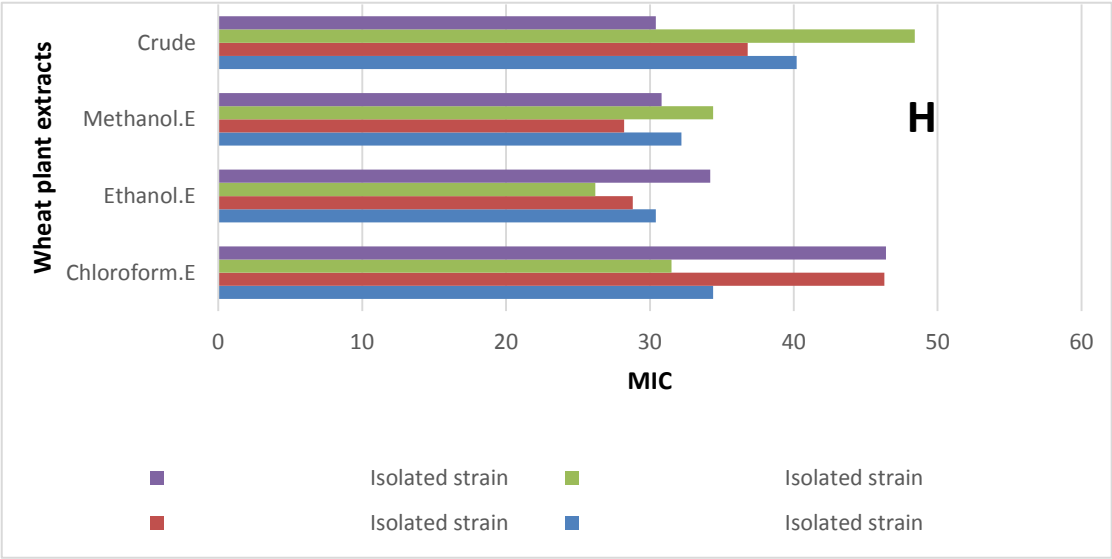
Extracts of Wheat plant	Isolated strain							
	S.mutans		S.sanguis		S.mitis		Enterococci	
	IZ	AI	IZ	AI	IZ	AI	IZ	AI
Chloroform.E	17.8± 0.21	0.872	19.2± 0.51	0.783	19.4± 0.22	0.873	21.4± 0.34	0.869
Ethanol.E	19.4± 0.54	0.950	20.4± 0.41	0.832	22.1± 0.81	0.995	20.2± 0.72	0.821
Methanol.E	17.8± 0.33	0.872	18.4± 0.32	0.751	20.6± 0.51	0.927	19.4± 0.51	0.788
Crude	17.2± 0.16	0.843	17.2± 0.44	0.702	19.4± 0.31	0.873	16.4± 0.66	0.666
Standard	20.4		24.5		22.2		24.6	

Table 13. MIC (Zone of inhibition,mm) of various extracts of wheat plant against dental pathogens.

Extracts of Wheat plant	Isolated strain			
	S.mutans	S.sanguis	S.mitis	Enterococci
Chloroform.E	34.4	46.3	31.5	46.4
Ethanol.E	30.4	28.8	26.2	34.2
Methanol.E	32.2	28.2	34.4	30.8
Crude	40.2	36.8	48.4	30.4



Graph G. Activation index against isolated dental plaque strains



Graph H. MIC against isolated dental plaque strains

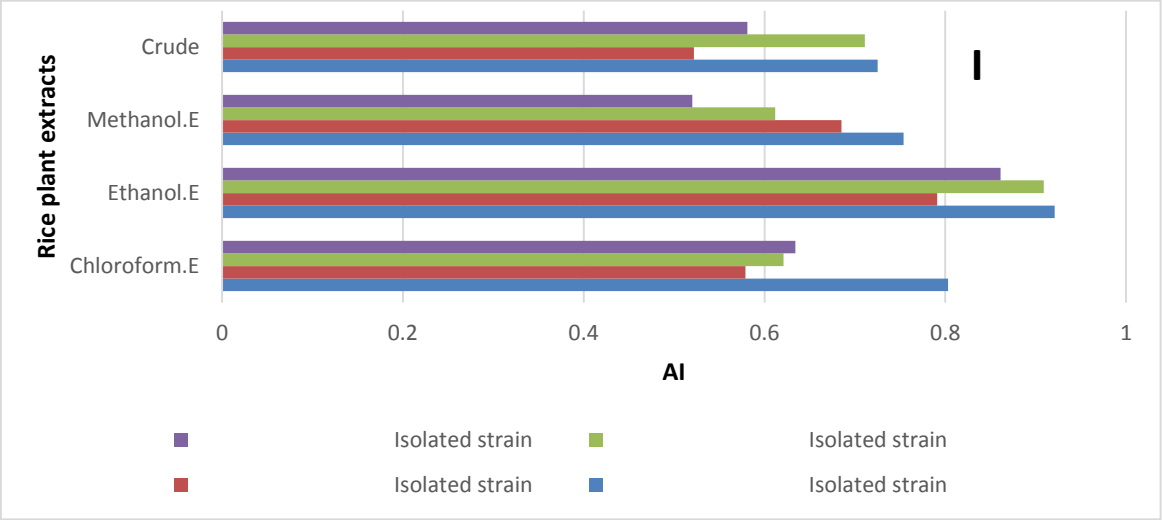
Graph 4. graph G and H showing comparative antimicrobial activity of different extracts of Wheat plant extracts against dental plaque strains.

Table 14. Antimicrobial activity (Zone of inhibition,mm) of various plant extracts of Rice against dental pathogens.

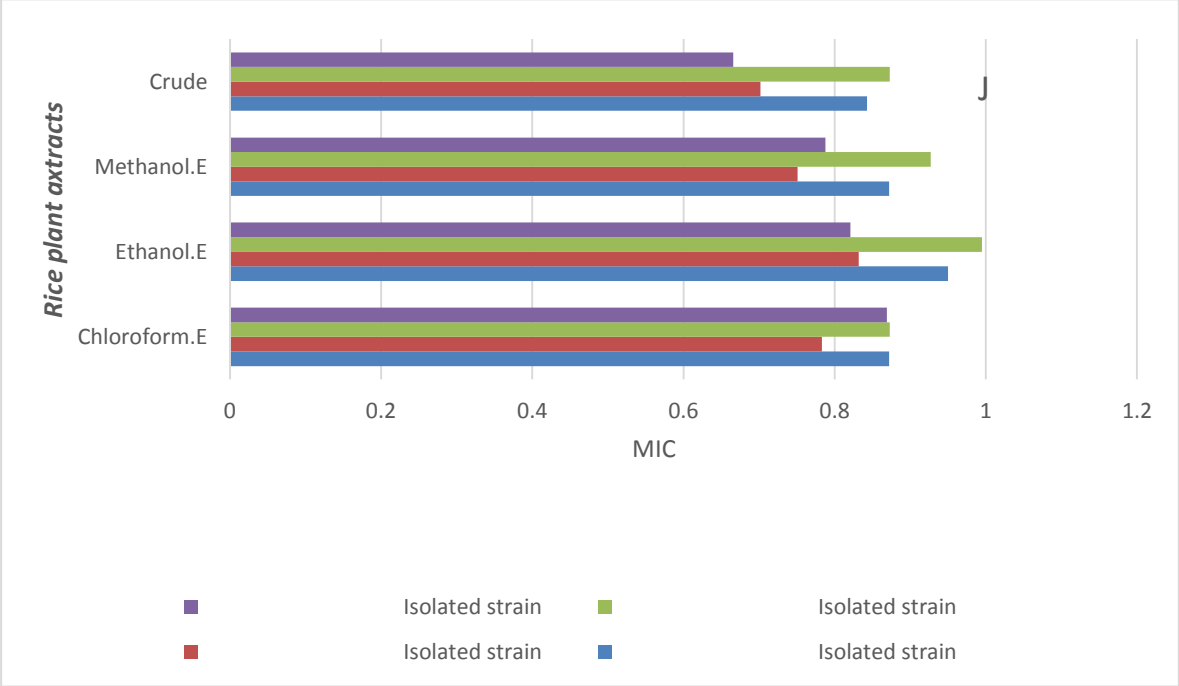
Extracts of rice	Isolated strain							
	S.mutans		S.sanguis		S.mitis		Enterococci	
	IZ	AI	IZ	AI	IZ	AI	IZ	AI
Chloroform.E	16.4± 0.56	0.803	14.2± 0.35	0.579	13.8± 0.50	0.621	15.6± 0.54	0.634
Ethanol.E	18.8± 0.40	0.921	19.4± 0.25	0.791	20.2± 0.44	0.909	21.2± 0.91	0.861
Methanol.E	15.4± 0.52	0.754	16.8± 0.42	0.685	13.6± 0.54	0.612	12.8± 0.58	0.520
Crude	14.8± 0.31	0.725	12.8± 0.32	0.522	15.8± 0.61	0.711	14.3± 0.35	0.581
Standard	20.4		24.5		22.2		24.6	

Table 15: MIC perfomance (Zone of inhibition,mm) of various plant extracts of Rice against dental pathogens.

Extracts of rice plant	Isolated strain			
	S.mutans	S.sanguis	S.mitis	Enterococci
Chloroform.E	32.8	34.6	46.4	47.2
Ethanol.E	40.8	29.4	38.4	21.2
Methanol.E	36.4	30.2	40.8	12.8
Crude	38.4	42.8	46.2	14.3



Graph I. AI against isolated dental plaque strains



Graph J. MIC against isolated dental plaque strains.

Graph 5: graph I and J showing comparative antimicrobial activity of different extracts of Rice plant extracts against dental plaque strains.

In the present investigation , the inhibitory effect of different extracts (viz, Methanol, Chloroform, Ethanol and crude) of in vivo leaves from Achyranthes Aspera, Cynadon daclylon(Grass), Wheat and Rice plant and cow dung extract were evaluated against *S.mutans , S.salvaris, and Enterococci* strains isolated from dental plaque samples.The activity of natural product , against microorganism has been recently confirmed by several studies focusing on antimicrobial activity of essential oils, plant extracts against planktonic cells. However, bacteria growing in biofilm exhibit a specific phenotype and are often, but not always , more resistant to antimicrobial agents than their planktonic counterparts [10,11]. Thus, it is important to search for natural products that have antibiofilm properties and antimicrobial activity against oral pathogen[20].

The activity in our investigation was assessesd on the basis of inhibition of zone and by MIC. Measurement of antimicrobial activity using disk diffusion method. Antimicrobial potential of all selected species was evaluated according to their zone of inhibition against cariogenic selected strains of streptococcus isolated from dental plaque and the result (zone of inhibition)

were compared with the activity of the standards, Amoxicillin and Azithromycin (1.0 mg/disc)The result revealed that all the extracts are potent antimicrobial against all the selected cariogenic strains.

Among the different solvent extracts studied chloroform and ethanol showed the degree of inhibition followed by methane, crude extract, ethanol. For all the tested microorganism chloroform and ethanol extract of cynadon daclylon showed maximum antimicrobial activity followed by Cow dung, Achyranthes Aspera L.leaf extract, Wheat plant and Rice plant. Crude extract and methanol extracts showed very less difference in there antimicrobial property on selected strain.

The MIC as compared with crude extract the methanol and ethanol extract shows more potency of revealing antimicrobial property against *S.mutans and Eneterococci strains.*In chloroform and crude extract *S.mutans and Eneterococci* showed less activity respectively.Where as, *S.sanguis* and *S.mitis* however showed equal response in chloroform,ethanol,methnol but less in crude extract of Cynadon daclylon ,Cow dung , Achyranthes Aspera L. ,Wheat and Rice extracts**.**The search for antimicrobial property from natural sources has received much attention and effort have been put in to identify compounds that can act as suitable antimicrobial agent to replace synthetic ones. Phytochemicals derived from plant products serve as a prototype to develop less toxin and more effective medicine in controlling the growth of microorganism[21, 22].

In the present investigation , different extracts of cow dung , Cynadon daclylon , Achyranthes Aspera L.,Wheat and Rice plants was evaluated for exploration of their antimicrobial activity against gram positive cocci isolated from dental plaque sample which is responsible for dental plaque cariogenic property. Susceptibility of each plant extract was tested by serial micro dilution method .Our preliminary investigation showed that all ethanol, chloroform, methanol and crude extracts of cow dung, Cynadon daclylon, Achyranthes Aspera L.,Wheat and Rice were active against the dental plaque responsible cariogenic *streptococcus s*pecies isolated from dental plaque sample where *S.mutans, S.sanguis, S.mitis and Enterococci* .

To assay the antimicrobial property by using plant extract has been realize by many scientist in many species like- Zingiber officinale, Curcuma longa, Commiphora molmol, Achyranthes Aspera L.,Azadirachta indica etc.The alcoholic extract of Cow dung, Achyranthes Aspera L., Cynadon daclylon,Wheat and Rice showed significant antimicrobial activity against cariogenic *Streptococcus* strains isolated from dental plaque sample.

By the above result it is seen that the effectiveness of the extract depend on the type of solvent used. In our study we have found that the organic solvent ethanol has shown more effective antimicrobial property as compared to chloroform,methanol and crude. In comparision to chloroform and methanol, crude extract have exhibited slightly more zone of inhibition in *S.sanguis and enterococci*.

In a research mentioned that most antibiotics compound can easily solublised in organic solvent. Similar results showing that the organic extracts having the best antimicrobial activity is also reported by many scientist in their selected plant species [20,21].S.Rjeswari studied antimicrobial activity of cow dung extracts against human pathogens using acetone and ethanol extracts. Assesment of antimicrobial activity of Neem plant (Azadirachtaindica) on *Staphylococcus aureus* and *Escherichia coli* by Uwimbabazi Francine etc. Many researches are done discussing and revaling the antimicrobial property of selected herbs, plant species, many more by using organic solvents, which determines the effect of organic solvent in extraction process and obtaining the good antimicrobial property of selected species as compare to crude and aqueous extracts.

In our study crude extract shows moderate antimicrobial activity against strains of *Streptococcus mutans,* which showed less zone of inhibition in organic extracts of Achyranthes Aspera L. and Wheat extracts. This shows that in some strains of *Streptococcus ev*en crude extract exhibit better antimicrobial activity as compare to organic solvent.

V. CONCLUSION

The research was carried out in order to determine the effect of Cow-dung , Cynadon dactylon (L.), Achyranthes Aspera L.,Wheat and Rice plant extract against *Streptococcus* species isolated from dental plaque sample. *S.sanguis* and *S.mitis* were the most susceptible bacteria to all plant extracts as compared to *S.mutans and Enterococci*. The extract showed significant activity against the investigated microbial strains, which is promising. These extarcts were not pure compound and in spite of it , antimicrobial results were obtained efficiently.

Lastly based on the information obtain from this study the antimicrobial effect of cow-dung, Cynodon dactylon (L.), Achyranthes Aspera L ,Wheat and Rice,can change depending on solvent used and the extract concentration also *matters* a lot because each extract has its minnium inhibition concentration (mic) which is highest dilution of extract that still reveals inhibitory effect against strains. In present investigation the extracts of selected species contains a good potential antimicrobial component that may be of great use for the development of potent and powerful drugs for the treatment of dental problems and *Streptococcus* related health infection. This study also, demonstrate that folk medicine can be as effective as modern medicine to combat dental plaque pathogen.

VI. ACKNOWLEDGEMENT

The author thankful to Jyoti Vidyapeeth Women University, trained dentist of Daman (U.T)and Vapi city of Gujrat,and Haria L G Rotary Hospital for conducting the research work sucessfully.

VII. REFERENCES

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