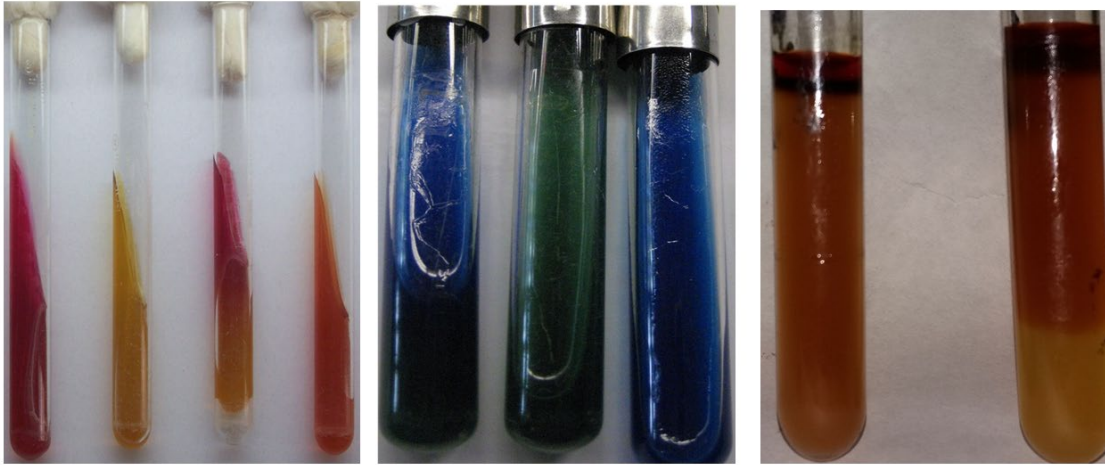


Table S1-Biochemical test of different bacteria

	Gram Staining	Catalase Test	Coagulase Test	Oxidase Test	Citrate Test	Indole Test	Urease Test	Triple sugar iron (TSI)	Identified bacterial species
01	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
02	Negative	NA	NA	-	+	-	+	+	<i>Proteus mirabilis</i>
03	Positive	-	+	NA	NA	NA	NA	NA	<i>Streptococcus pyogene</i>
04	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
05	Negative	NA	NA	-	+	-	+	+	<i>K.pneumoniae</i>
06	Positive	-	+	NA	NA	NA	NA	NA	<i>Streptococcus pyogene</i>
07	Negative	NA	NA	-	d	+	+	+	<i>Proteus Vulgaris</i>
08	Positive	-	+	NA	NA	NA	NA	NA	<i>Streptococcus pyogene</i>
09	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
10	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
11	Negative	NA	NA	-	+	-	+	+	<i>K.pneumoniae</i>
12	Negative	NA	NA	-	+	-	+	+	<i>Proteus mirabilis</i>
13	Negative	NA	NA	-	+	-	+	+	<i>Proteus mirabilis</i>
14	Positive	-	+	NA	NA	NA	NA	NA	<i>Streptococcus pyogene</i>
15	Negative	NA	NA	-	-	d	-	+	<i>Shigella</i>
16	Negative	NA	NA	-	+	-	+	+	<i>K.pneumoniae</i>
17	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
18	Positive	-	+	NA	NA	NA	NA	NA	<i>Streptococcus pyogene</i>
19	Negative	NA	NA	-	-	+	-	+	<i>E.coli</i>
20	Negative	NA	NA	-	+	-	+	+	<i>Proteus mirabilis</i>
21	Negative	NA	NA	-	+	-	+	+	<i>K.pneumoniae</i>
22	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
23	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>
24	Negative	NA	NA	-	+	-	+	+	<i>Proteus mirabilis</i>
25	Negative	NA	NA	+	+	-	-	+	<i>Aeromonas</i>
26	Negative	NA	NA	-	+	-	+	+	<i>Proteus mirabilis</i>
27	Positive	+	+	NA	NA	NA	NA	NA	<i>Staphylococcus aureus</i>



A

B

C

Figure S1-Biochemical Tests: (A) TSI test performed for identification of Gram-negative bacteria; (B) Citrate test performed for identification of Gram-negative bacterial strains; (C) Indole test performed for Gram-negative bacteria identification. The red surface layer indicates a positive result.

Table S2- Antimicrobial activity of various antibiotics against isolated bacteria strains from teeth gums.

Antibiotics	Bacterial Strains	Zone of inhibition in millimetre (mm) regarding dose in ug / uL						Mean Activity (with 95 % CI) in mm	Standard Deviation SD	Pearson Correlation b/w Dose and Activity (P = 0.05)	R squared (r ²)
		5 ug / ul	10 ug / ul	15 ug / ul	20 ug / ul	25 ug / ul	30 ug / ul				
FOX	<i>K. pneumoniae</i>	21.2	24.2	27.1	30.5	33.2	36.7	24.19, 33.43	5.77	p = < .00001	0.9992
	<i>Staph. aureus</i>	18.1	21.2	24.1	27.3	30.2	33.6	21.14, 30.35	5.75	p = < .00001	0.9996
	<i>S. pyogenes</i>	15.5	18.1	21.1	24.2	27.3	30.4	18.26, 27.26	5.62	p = < .00001	0.9992
	<i>P. mirabilis</i>	21.2	24.2	27.1	30.4	33.2	36.7	24.18, 33.41	5.76	p = < .00001	0.9992
	<i>P. vulgaris</i>	30.5	33.2	39.5	42.1	45.1	45.4	34.92, 44.87	6.21	p = .001381 (non-significant)	0.9399
	<i>S. sonnei</i>	30.5	33.2	39.5	42.1	45.1	45.4	34.92, 44.87	6.21	p = .001381 (non-significant)	0.9399
	<i>E. coli</i>	22.1	25.6	28.1	31.2	34.4	37.8	25.24, 34.48	5.77	p = < .00001	0.9982
	<i>A. hydrophila</i>	32.3	35.1	38.2	41.1	44.2	47.9	35.16, 44.43	5.78	p = < .00001	0.9882
SXT	<i>K. pneumoniae</i>	23.1	25.4	27.2	29.1	31.5	33.1	25.22,31.23	3.75	p = < .00001	0.9978
	<i>Staph. aureus</i>	18.4	20.3	22.1	24.3	26.9	28.2	20.32, 26.41	3.80	p = .00001	0.9948
	<i>S. pyogenes</i>	15.3	17.4	19.1	21.1	23.2	25.1	17.27, 23.14	3.65	p = .006583	0.9994
	<i>P. mirabilis</i>	21.2	23.2	25.1	27.3	29.3	31.3	23.19, 29.27	3.79	p = < .00001	0.9998
	<i>P. vulgaris</i>	25.3	27.3	29.4	31.2	33.2	35.1	27.31, 33.18	3.66	p = < .00001	0.9996
	<i>S. sonnei</i>	17.5	19.4	21.2	23.1	25.1	27.2	19.36, 25.13	3.60	p = < .00001	0.9992
	<i>E. coli</i>	24.5	26.4	28.1	30.2	32.4	34.3	26.35, 32.27	3.69	p = < .00001	0.9986
	<i>A. hydrophila</i>	20.2	22.4	24.6	26.3	28.2	30.4	22.34, 28.35	3.75	p = < .00001	0.9984
OX	<i>K. pneumoniae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<i>Staph. aureus</i>	22.4	32.1	24.3	25.3	26.2	27.1	23.59, 28.87	3.30	p = .835517 (non-significant)	0.0121
	<i>S. pyogenes</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<i>P. mirabilis</i>	19.3	20.1	21.3	22.4	23.5	24.6	20.24, 23.48	2.02	p = < .00001	0.9989
	<i>P. vulgaris</i>	20.4	21.3	22.2	23.1	24.3	25.5	21.28, 24.31	1.89	p = .000011	0.9946
	<i>S. sonnei</i>	18.5	19.3	20.1	21.4	21.3	23.9	19.22, 22.27	1.90	p = .002368	0.9216
	<i>E. coli</i>	12.3	13.2	14.1	15.3	16.2	17.1	13.23, 16.16	1.82	p = < .00001	0.9982
	<i>A. hydrophila</i>	18.5	19.3	20.1	21.3	22.5	23.5	19.33, 22.40	1.92	p = .000017	0.9932
VA	<i>K. pneumoniae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	<i>Staph. aureus</i>	10.1	12.3	14.2	16.3	18.8	20.4	12.22, 18.47	3.91	p = < .00001	0.9980
	<i>S. pyogenes</i>	12.1	14.2	16.1	18.3	20.1	22.4	14.14, 20.25	3.81	p = < .00001	0.9992
	<i>P. mirabilis</i>	13.2	15.4	17.3	19.2	21.1	23.4	15.27, 21.26	3.73	p = < .00001	0.9991
	<i>P. vulgaris</i>	11.2	13.1	15.2	17.2	19.3	21.9	13.14, 19.48	3.96	p = < .00001	0.9976
	<i>S. sonnei</i>	12.1	14.3	16.2	18.1	20.1	22.4	14.17, 20.23	3.78	p = < .00001	0.9991
	<i>E. coli</i>	11.3	13.4	15.1	17.3	19.2	21.9	13.25, 19.47	3.88	p = < .00001	0.9961
	<i>A. hydrophila</i>	8.2	10.3	12.1	14.3	16.4	18.5	10.22, 16.38	3.84	p = < .00001	0.9994
MXF	<i>K. pneumoniae</i>	30.2	33.1	36.4	39.2	42.1	45.3	33.21, 42.22	5.62	p = < .00001	0.9996
	<i>Staph. aureus</i>	29.4	32.1	35.2	38.5	41.2	44.6	32.27, 41.39	5.70	p = < .00001	0.9991
	<i>S. pyogenes</i>	23.5	26.1	29.3	32.4	33.4	36.7	26.31, 34.15	4.89	p = .000061	0.9872
	<i>P. mirabilis</i>	28.1	31.2	34.5	37.3	40.1	43.4	31.23, 40.30	5.66	p = < .00001	0.9992
	<i>P. vulgaris</i>	31.2	34.1	37.4	40.2	43.1	46.5	34.20, 43.29	5.68	p = < .00001	0.9994
	<i>S. sonnei</i>	30.2	33.2	36.5	39.2	42.2	45.1	33.27, 42.19	5.71	p = < .00001	0.9994
	<i>E. coli</i>	29.4	32.1	35.3	38.2	41.4	44.2	32.28, 41.24	5.60	p = < .00001	0.9996
	<i>A. hydrophila</i>	31.4	34.2	37.1	40.5	43.2	46.1	34.30, 43.19	5.55	p = < .00001	0.9992
AMC	<i>K. pneumoniae</i>	3.6	5.4	7.6	9.8	11.2	13.4	5.56, 11.43	3.67	p = < .00001	0.9972
	<i>Staph. aureus</i>	6.4	8.2	10.9	12.6	14.5	16.4	8.47, 14.52	3.78	p = < .00001	0.9962
	<i>S. pyogenes</i>	0.00	0.00	0.00	2.6	4.3	6.8	0.01, 4.55	2.83	p = .006583	0.8705
	<i>P. mirabilis</i>	9.3	11.5	13.2	15.4	17.6	19.4	11.36, 17.43	3.79	p = < .00001	0.9988
	<i>P. vulgaris</i>	10.9	12.4	14.3	16.4	18.7	20.3	12.58, 18.41	3.64	p = < .00001	0.9954
	<i>S. sonnei</i>	8.3	10.4	12.5	14.3	16.8	18.7	10.37, 16.62	3.90	p = < .00001	0.9988
	<i>E. coli</i>	9.5	11.4	13.4	15.6	17.4	19.4	11.46, 17.43	3.72	p = < .00001	0.9996
	<i>A. hydrophila</i>	11.4	13.2	15.3	17.3	19.2	21.4	13.30, 19.29	3.74	p = < .00001	0.9994
AMP	<i>K. pneumoniae</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<i>Staph. aureus</i>	9.3	10.3	11.3	12.5	13.2	11.5	10.21, 12.48	1.41	p = .063222 (non-significant)	0.6194
	<i>S. pyogenes</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<i>P. mirabilis</i>	17.4	18.4	10.5	20.1	21.2	22.3	14.93, 21.69	4.22	p = .271394 (non-significant)	0.2889
	<i>P. vulgaris</i>	18.4	19.4	20.1	21.3	22.1	23.4	19.31, 22.25	1.83	p = .000013	0.9940
	<i>S. sonnei</i>	17.3	18.4	19.4	20.2	21.5	22.6	18.33, 21.46	1.95	p = < .00001	0.9966
	<i>E. coli</i>	22.4	23.5	24.3	25.3	26.3	27.6	23.38, 26.41	1.89	p = < .00001	0.9956
	<i>A. hydrophila</i>	21.2	22.2	23.4	24.5	25.7	26.3	22.29, 25.47	1.98	p = .000015	0.9936
AZM	<i>K. pneumoniae</i>	8.4	9.5	10.9	11.9	12.5	13.4	9.59, 12.60	1.88	p = .000093	0.9843
	<i>Staph. aureus</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	<i>S. pyogenes</i>	8.4	9.6	10.8	11.6	12.4	13.1	9.57, 12.39	1.76	p = .000071	0.9862
	<i>P. mirabilis</i>	15.3	16.2	17.4	18.4	19.4	20.6	16.29, 19.47	1.98	p = < .00001	0.9988
	<i>P. vulgaris</i>	18.1	19.2	20.6	21.4	22.3	23.3	19.26, 22.36	1.93	p = .000018	0.9930
	<i>S. sonnei</i>	12.1	13.2	14.3	15.1	16.4	17.3	13.17, 16.29	1.94	p = < .00001	0.9976
	<i>E. coli</i>	7.5	8.3	9.5	10.1	11.3	12.4	8.38, 11.31	1.82	p = .000014	0.9938
	<i>A. hydrophila</i>	17.5	18.3	19.7	20.3	21.4	22.3	18.46, 21.37	1.81	p = .000017	0.9932

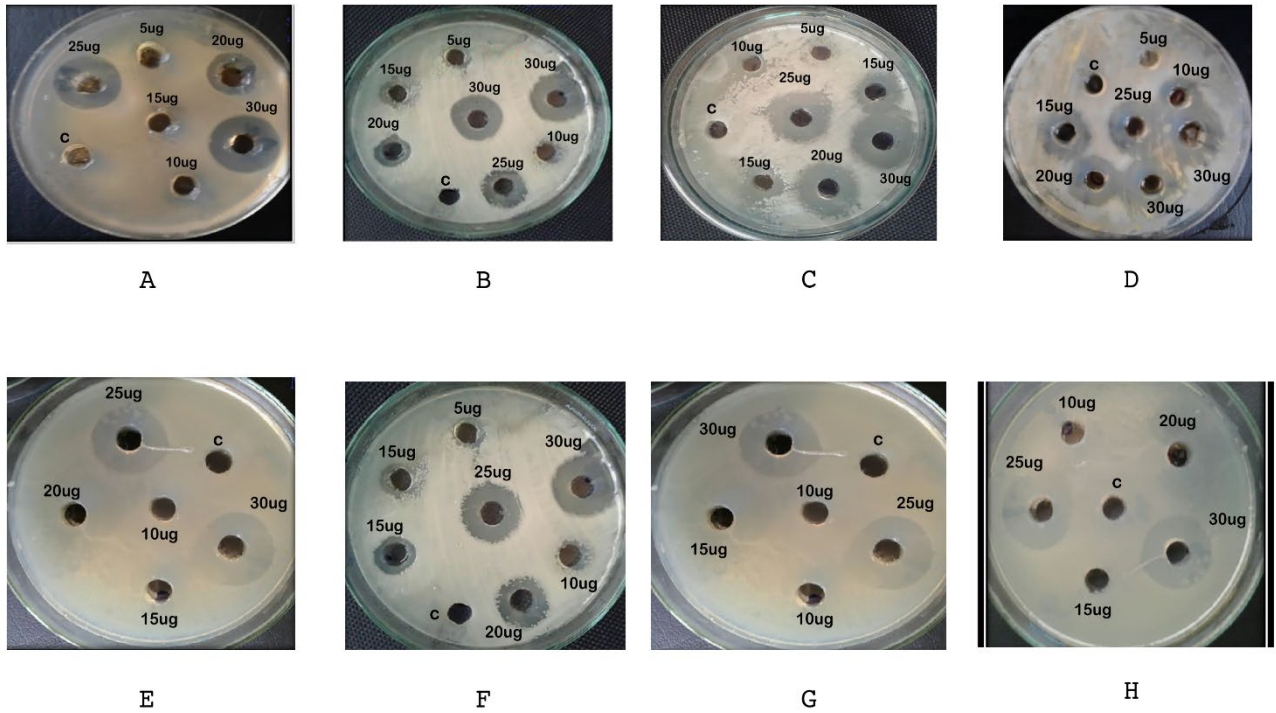
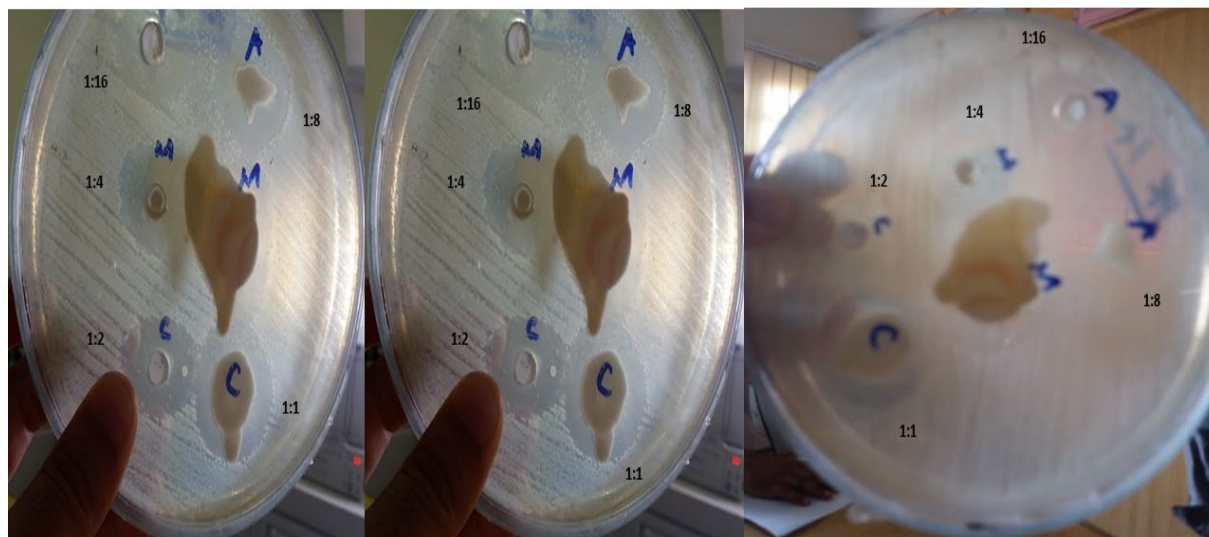


Figure S2-Antibiotic susceptibility tests-(A) FOX against *Aeromonas hydrophila* **(B)** MXF against *A. hydrophila* **(C)** SXT against *P. vulgaris*-**(D)** AMP showed maximum activity against *E.coli*, **(E)** OX against *S. aureus*, **(F)** VA showed y against *P.mirabilis* **(G)** AZM against *P. vulgaris*, **(H)** AMC gainst *A. hydrophila*

Table S3-Evaluation of toothpaste sensitivities against isolated bacterial species from teeth gums.

Toothpastes	Bacterial strains	Zone of inhibition in millimetre (mm) regarding dose					Mean Activity (with 95 % CI) in mm	Standard Deviation SD	Pearson Correlation b/w Dose and Activity (P = 0.05)	R squared (r ²)
		Dilution 1:16	Dilution 1:8	Dilution 1:4	Dilution 1:2	Dilution 1:1				
TP1	<i>K. pneumonia</i>	17.1	18.3	20	22.2	26.1	17.6221, 23.8579	3.55	p = .005158	0.9477
	<i>S. aureus</i>	10.1	11.2	15.1	17.1	21.3	10.978, 18.942	4.54	p = .0022	0.9702
	<i>S. Pyogenes</i>	9.1	10.1	13.3	16.4	28.1	8.689, 22.111	7.65	p = .029417	0.837
	<i>P. mirabilis</i>	8.1	9.1	12.3	15.2	26.1	7.8176, 20.5024	7.23	p = .026884	0.8462
	<i>P. vulgaris</i>	11.2	12.3	14	14.1	34.2	8.743, 25.577	9.60	p = .114161 non-significant	0.6194
	<i>S. sonnei</i>	11.1	12.3	13.1	15.2	24.3	10.553, 19.847	5.30	p = .052787 non-significant	0.7635
	<i>E. coli</i>	7.4	8.3	11.1	14.1	29.2	6.2354, 21.8046	8.88	p = .049295	0.7735
	<i>A hydrophila</i>	13.1	14.2	15.1	16.3	24.1	12.7245, 20.3955	4.37	p = .054655 non-significant	0.7583
TP2	<i>K. pneumoniae</i>	16.1	17.2	19.1	21.3	26.1	16.4883, 23.4317	3.96	p = .054655 non-significant	0.7583
	<i>S. aureus</i>	20.2	21.3	22.1	26.1	30.3	20.35, 27.65	4.16	p = .01384	0.9
	<i>S. Pyogenes</i>	18.1	19.1	20	23.2	27.4	18.2439, 24.8761	3.78	p = .01384	0.9
	<i>P. mirabilis</i>	14.2	15.3	19.1	22.2	27.3	14.9417, 24.2983	5.33	p = .003234	0.9616
	<i>P. vulgaris</i>	18.1	19.3	21.4	26.1	29.2	18.7053, 26.9347	4.69	p = .004227	0.9541
	<i>S. sonnei</i>	17.3	18.2	20.1	25.4	29.2	17.5807, 26.4993	5.08	p = .008359	0.9281
	<i>E. coli</i>	9.3	10.2	14.1	19.4	22.3	10.0828, 20.0372	5.67	p = .003335	0.9608
	<i>A hydrophila</i>	8.1	9.3	16.2	21.2	23.1	9.6366, 21.5234	6.78	p = .004173	0.9545
TP3	<i>K. pneumoniae</i>	14.3	15.2	17.1	19.3	22.4	14.7924, 20.5276	3.27	p = .00311	0.9626
	<i>S. aureus</i>	15.3	16.3	18.2	19.1	25.1	15.444, 22.156	3.82	p = .024377	0.8556
	<i>S. Pyogenes</i>	10.2	11.3	15.2	16.4	21.3	11.0008, 18.7592	4.42	p = .004643	0.9512
	<i>P. mirabilis</i>	16.1	17.3	19.2	20.3	22.4	16.8875, 21.2325	2.47	p = .000399	0.9904
	<i>P. vulgaris</i>	18.2	19.1	20.3	21.4	26.2	18.2984, 23.7816	3.12	p = .024329	0.8558
	<i>S. sonnei</i>	16.2	17.1	18.3	19.1	21.2	16.6901, 20.0699	1.92	p = .002401	0.9685
	<i>E. coli</i>	13.2	14.1	16.3	17.2	21.2	13.655, 19.145	3.13	p = .00802.	0.9301
	<i>A. hydrophila</i>	11.3	12.1	15.3	18.2	23.4	11.7354, 20.3846	4.93	p = .00802	0.9301



A

B

C

Figure S3-Tooth paste antimicrobial activity against *P.vulgaris*- (A) TP1, (B) TP2, (C) TP3.

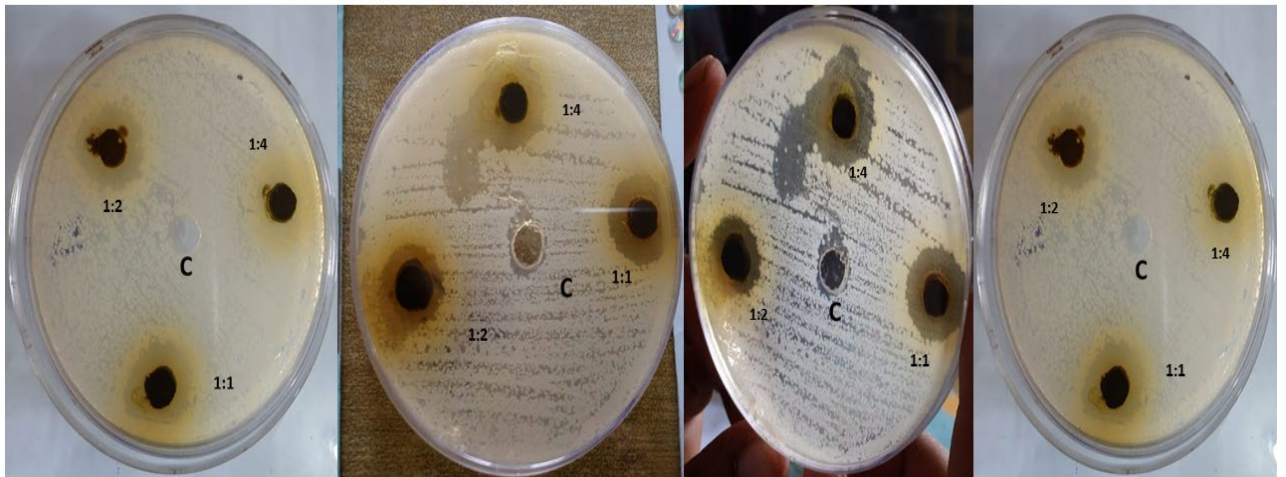
Table S4-Antimicrobial activity of the plant extracts against bacterial species isolated from gums.

Plant Extract	Bacterial Strains	Zone of inhibition in millimeter (mm) regarding dose					Mean Activity (with 95 % CI) in mm	Standard Deviation SD	Pearson Correlation b/w Dose and Activity (P = 0.05)	R squared (r ²)
		Dilution 1:16	Dilution 1:8	Dilution 1:4	Dilution 1:2	Dilution 1:1				
Ajuga bracteosa leaf	<i>K. pneumoniae</i>	14	14.2	14.2	14.3	14.5	14.0808, 14.3992	0.18	p = .9574	0.9166
	<i>S. aureus</i>	11	11	11.1	11.1	11.2	11.0067, 11.1533	0.08	p = .015397	0.8928
	<i>S. Pyogenes</i>	6	6.1	6.3	6.4	6.5	6.0782, 6.4418	0.20	p = .00099	0.9825
	<i>P. vulgaris</i>	10	10	10.1	10.1	10.2	10.0067, 10.1533	0.08	p = .015397	0.8928

	<i>E. coli</i>	9	9.1	9.3	9.3	9.5	9.0691, 9.4109	0.19	p = .005216	0.9473
	<i>P. mirabilis</i>	5.1	5.3	5.3	5.5	5.6	5.1891, 5.5309	0.19	p = .005216	0.9473
	<i>A. hydrophila</i>	10	10	10.1	10.2	10.3	10.0057, 10.2343	0.13	p = .006179	0.9411
	<i>S. sonnei</i>	5	5.2	5.3	5.4	5.4	5.1133, 5.4067	0.16	p = .015397	0.8928
Ajuga bracteosa root	<i>K. pneumoniae</i>	13	13.2	13.4	13.5	13.6	13.1289, 13.5511	0.24	p = .002244	0.9698
	<i>S. aureus</i>	9	9	9.1	9.1	9.2	9.0067, 9.1533	0.08	p = .015397	0.8928
	<i>S. Pyogenes</i>	9	9.1	9.1	9.2	9.3	9.0401, 9.2399	0.11	p = .005994	0.9423
	<i>P. vulgaris</i>	7	7.1	7.2	7.4	7.5	7.0582, 7.4218	0.20	p = .00099	0.9825
	<i>E. coli</i>	6	6	6.1	6.1	6.2	6.0067, 6.1533	0.08	p = .015397	0.8928
	<i>P. mirabilis</i>	12.8	13	13.1	13.3	13.4	12.9107, 13.3293	0.23	p = .000643	0.9868
	<i>A. hydrophila</i>	14	14.1	14.3	14.4	14.5	14.0782, 14.4418	0.20	p = .00099	0.9825
	<i>S. sonnei</i>	6.7	6.9	7	7.1	7.2	6.8114, 7.1486	0.19	p = .0019	0.973
Ajuga bracteosa stem	<i>K. pneumoniae</i>	5	5	5.1	5.2	5.3	5.0057, 5.2343	0.13	p = .006179	0.9411
	<i>S. aureus</i>	13	13.1	13.2	13.2	13.3	13.0601, 13.2599	0.11	p = .005994	0.9423
	<i>S. Pyogenes</i>	9	9.1	9.1	9.1	9.2	9.038, 9.162	0.07	p = .040535	0.8000
	<i>P. vulgaris</i>	8	8	8.1	8.1	8.2	8.0067, 8.1533	0.08	p = .015397	0.8928

	<i>E. coli</i>	10	10.1	10.2	10.2	10.3	10.0601, 10.2599	0.11	p = .005994	0.9423
	<i>P. mirabilis</i>	7.9	7.9	8	8.1	8.2	7.9057, 8.1343	0.13	p = .006179	0.9411
	<i>A. hydrophila</i>	12.8	12.9	13.1	13.1	13.2	12.86, 13.14	0.15	p = .008737	0.926
	<i>S. sonnei</i>	7.6	7.7	7.9	8	8.1	7.6782, 8.0418	0.20	p = .00099	0.9825
Curcuma longa root	<i>K. pneumoniae</i>	16	16.2	16.3	16.6	16.7	16.1075, 16.6125	0.28	p = .00099	0.9825
	<i>S. aureus</i>	15	15.1	15.1	15.3	15.3	15.0424, 15.2776	0.13	p = .01628	0.8889
	<i>S. Pyogenes</i>	10	10	10.1	10.2	10.2	10.012, 10.188	0.1	p = .01384	0.9000
	<i>P. vulgaris</i>	9	9	9.1	9.1	9.2	9.0067, 9.1533	0.08	p = .015397	0.8928
	<i>E. coli</i>	12	12.1	12.2	12.2	12.3	12.0601, 12.2599	0.11	p = .005994	0.9423
	<i>P. mirabilis</i>	11.8	11.9	12	12.1	12.3	11.86, 12.14	0.15	p = .00190	0.9730
	<i>A. hydrophila</i>	16.9	17	17.1	17.3	17.5	16.9489, 17.3711	0.24	p = .002244	0.9698
	<i>S. sonnei</i>	8.8	8.9	9	9.1	9.1	8.8657, 9.0943	0.13	p = .006179	0.9411

1
2



3

A

B

C

D

4 **Figure S4-Antimicrobial activity of Plant extract activity against *A. hydrophila*-(A) *A. bracteosa* stem (B)**
5 ***A. bracteosa* leaves (C) *Curcuma longa* roots (D) *A. bracteosa* roots**