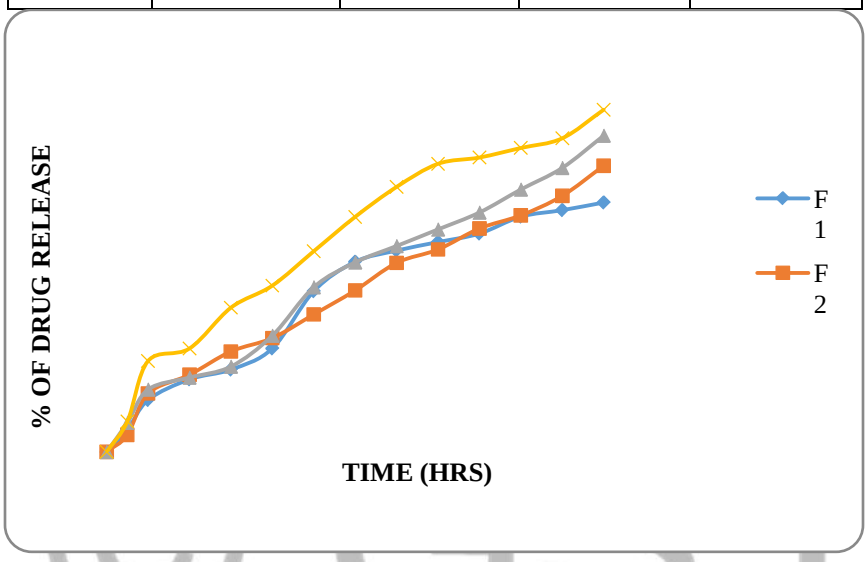
8	60.31	58.17	63.96	82.82
9	62.75	64.21	68.82	84.62
10	67.62	67.98	75.44	87.37
11	69.49	73.59	81.65	90.15
12	71.68	82.25	90.92	98.36

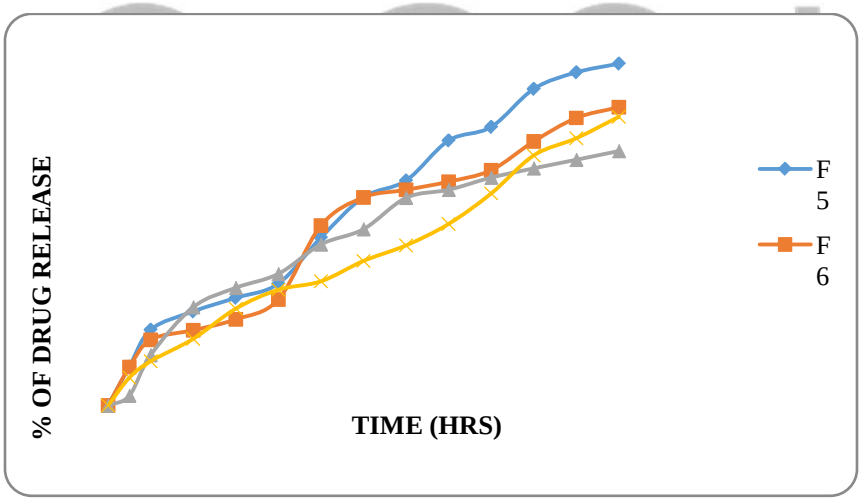


Dissolution profile of formulations prepared with Locust Bean gum polymer

***In vitro* drug release of Sotalol F5 to F8 formulations**

TIME (hr)	**CUMULATIVE PERCENT DRUG RELEASED**			
	F5	**F6**	**F7**	**F8**
0	0	0	0	0
0.5	10.6	10.46	2.68	7.58
1	20.65	17.91	13.72	12.07
2	25.63	20.50	26.77	18.16
3	29.35	23.46	32.05	26.39

4	33.21	28.89	35.85	31.54
5	45.76	49.03	43.87	33.83
6	56.76	56.70	48.02	39.40
7	61.32	58.76	56.57	43.63
8	72.23	60.98	58.76	49.48
9	75.93	64.12	62.07	57.78
10	86.30	71.95	64.59	68.15
11	90.82	78.34	66.93	72.84
12	93.19	81.28	69.31	78.69

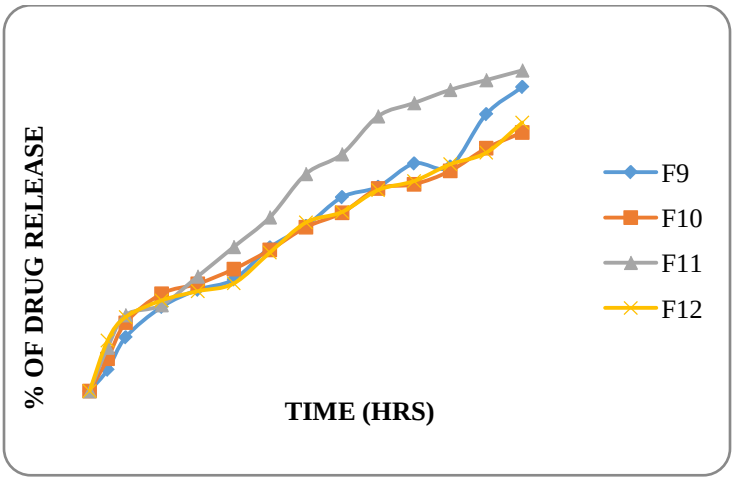


Dissolution profile of formulations prepared with Karaya gum polymer

***In vitro* drug release of Sotalol F9 to F12 formulations**

TIME (hr)	**CUMULATIVE PERCENT DRUG RELEASED**			
	F9	**F10**	**F11**	**F12**
0	0	0	0	0

0.5	5.86	8.85	11.98	13.92
1	14.79	18.81	20.91	20.36
2	23.15	26.80	23.66	24.95
3	27.86	29.52	31.55	27.47
4	30.70	33.58	39.68	29.63
5	39.50	38.85	47.82	38.12
6	45.40	45.12	59.75	46.39
7	53.33	49.05	65.19	49.28
8	56.17	55.73	75.62	55.31
9	62.60	56.92	79.26	57.79
10	61.75	60.60	82.89	62.42
11	76.16	66.84	85.58	65.59
12	83.64	71.18	88.25	73.90



Dissolution profile of formulations prepared with Xanthan gum as polymer

From the tabular column it was evident that the formulations prepared with Locust Bean gum as retarding polymer in low concentrations the polymer was unable to produce the required retarding action to the tablets. As the concentration of polymer increases the retarding nature was also increased. Locust Bean gum in the concentration of 80 mg showed good % drug release i.e., 98.36 in 12 hours.

Where as in case of formulations prepared with Karaya gum as retarding polymer, the formulations with 20 mg concentration of polymer showed complete drug release in 12 hours only, low concentrations the polymer was produce the required retarding action to the tablets. The Formulation Containing Karaya gum in 20 Mg Concentration Showed good retarding nature with required drug release in 12 hours i.e., 93.19 %.

The Formulation Containing Xanthan gum in 60 Mg Concentration Showed good retarding nature with required drug release in 12 hours i.e 88.25%.

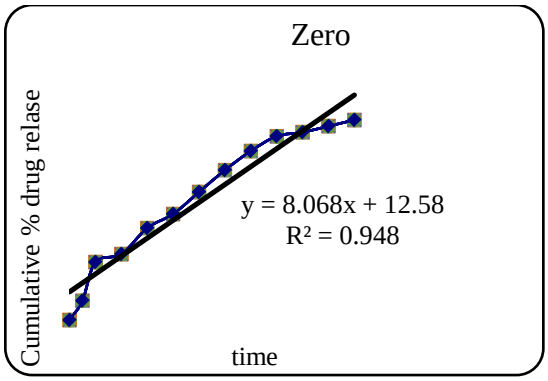
From the above results it was evident that the formulation F4 is best formulation with desired drug release pattern extended up to 12 hours.

Application of Release Rate Kinetics to Dissolution Data: Various models were tested for explaining the kinetics of drug release. To analyze the mechanism of the drug release rate kinetics of the dosage form, the obtained data were fitted into zero-order, first order, Higuchi, and Korsmeyer-Peppas release model.

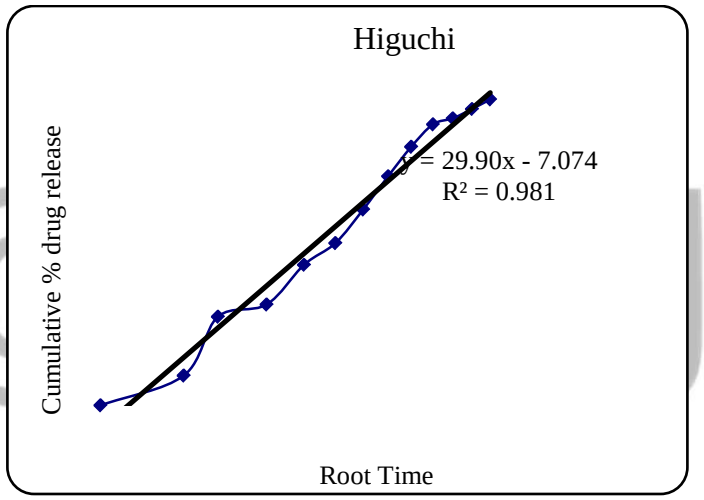
Release kinetics data for optimised formulation

CUMULATIVE (%) RELEASE Q	TIME (T)	ROOT (T)	LOG(%) RELEASE	LOG (T)	LOG (%) REMAIN	RELEASE RATE (CUMULATIVE % RELEASE / t)	1/CUM% RELEASE	PEPPAS log Q/100	% Drug Remaining	Q01/3	Qt1/3	Q01/3-Qt1/3
0	**0**	0			2.000				100	4.642	4.642	0.000
8.75	**0.5**	0.707	0.942	-0.301	1.960	17.500	0.1143	-1.058	91.25	4.642	4.502	0.140
26.13	**1**	1.000	1.417	0.000	1.868	26.130	0.0383	-0.583	73.87	4.642	4.196	0.446
29.72	**2**	1.414	1.473	0.301	1.847	14.860	0.0336	-0.527	70.28	4.642	4.127	0.515
41.45	**3**	1.732	1.618	0.477	1.768	13.817	0.0241	-0.382	58.55	4.642	3.883	0.759
47.79	**4**	2.000	1.679	0.602	1.718	11.948	0.0209	-0.321	52.21	4.642	3.738	0.904
57.68	**5**	2.236	1.761	0.699	1.627	11.536	0.0173	-0.239	42.32	4.642	3.485	1.157
67.56	**6**	2.449	1.830	0.778	1.511	11.260	0.0148	-0.170	32.44	4.642	3.189	1.452
76.17	**7**	2.646	1.882	0.845	1.377	10.881	0.0131	-0.118	23.83	4.642	2.878	1.764
82.82	**8**	2.828	1.918	0.903	1.235	10.353	0.0121	-0.082	17.18	4.642	2.580	2.061
84.62	**9**	3.000	1.927	0.954	1.187	9.402	0.0118	-0.073	15.38	4.642	2.487	2.155
87.37	**10**	3.162	1.941	1.000	1.101	8.737	0.0114	-0.059	12.63	4.642	2.329	2.313

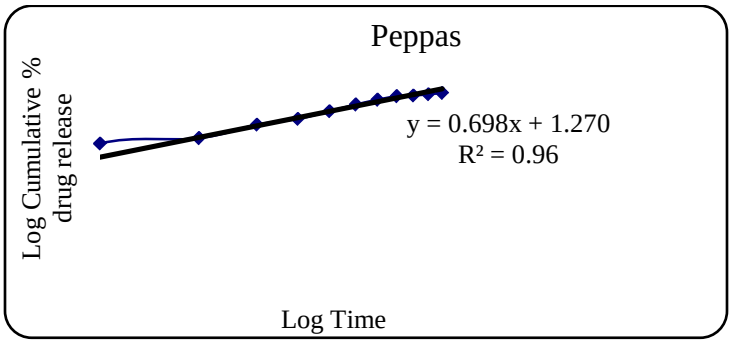
90.15	**11**	3.317	1.955	1.041	0.993	8.195	0.0111	-0.045	9.85	4.642	2.144	2.498
98.36	**12**	3.464	1.993	1.079	0.215	8.197	0.0102	-0.007	1.64	4.642	1.179	3.462



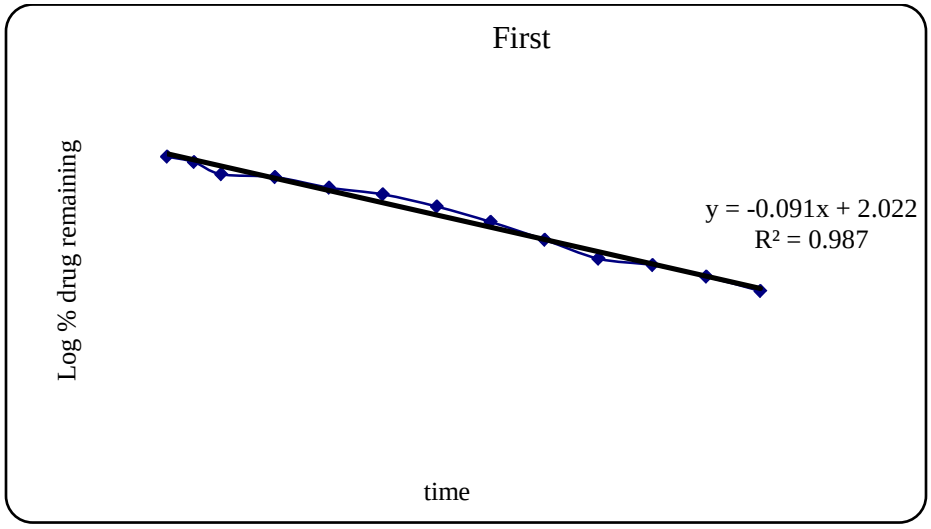
Zero order release kinetics graph



Higuchi release kinetics graph



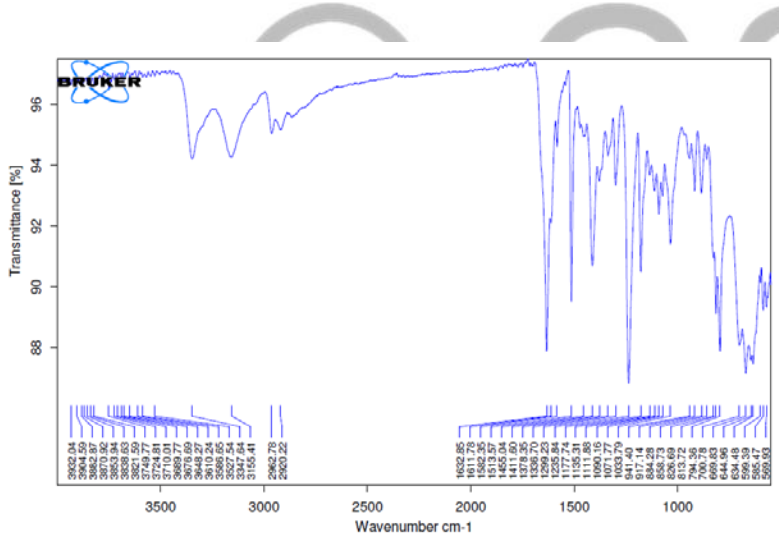
Kars mayer peppas graph



First order release kinetics graph

From the above graphs it was evident that the formulation F4 was followed First order release kinetics mechanism.

FTIR



FT-IR Spectrum of Sotalol pure drug

CONCLUSION

The present study was carried out to evaluate the natural polymers for its matrix forming ability due to formation of thick gel structure, so we concluded that Locust Bean gum, Karaya gum and Xanthan gum formulated tablets were found to be effective in controlled the drug release up to 12 hr. During this study, FT-IR studies resulted that all peaks corresponding to different functional groups of pure drug were present in the drug-exipient mixture no interaction between

the drug and excipients. It can be concluded that stable formulation could be developed by incorporating natural polymer in a definite proportion, so that the controlled released profile is maintained for an extended period. Among all the formulations F4 formulation showed maximum % drug release i.e., 98.36 % in 12 hours hence it is considered as optimized formulation F4 which contains Locust Bean gum (80mg). Release model of sample was found to follow First order release kinetics with high linearity.

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