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Original Article

PREPARATION AND EVALUATION OF TASTE MASKED DISPERSIBLE TABLETS OF AMOXYCILLIN TRIHYDRATE BY USING POLYELECTROLYTE COMPLEX TECNIQUE

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ABSTRACT

Amoxicillin is a moderate spectrum, bacteriolytic, β-lactam antibiotic in the aminopenicillin family used to treat bacterial infections caused by susceptible Gram-positive and Gram-negative microorganisms. It is usually the drug of choice within the class because it is well absorbed, following oral administration, than other β-lactam antibiotics. Amoxicillin is one of the most common antibiotics prescribed for children. Amoxicillin is often known for its unappealing taste and odour, which makes the difficulty in formulating paediatric formulation. In the present work, attempts were made to prepare dispersible tablets of amoxicillin trihydrate by direct compression technique to enhance patient compliance. The three super disintegrates used in the study were crosscarmellose sodium, crospovidone and Sodium Starch Glycolate (SSG). The polyelectrolyte complex materials like gum karaya, neem gum and hupu gum are used to prepare the different batches of tablets. The prepared batches of different tablets were evaluated for uniformity of weight thickness, hardness, friability, disintegration test and *in vitro* dissolution study tablet containing combination of crosscarmellose sodium and crospovidone showed excellent *in vitro* disintegration time and drug release as compared to other formulations and also characterized for drug excipient interaction using FTIR studies. Morphological size and shape of the particles are characterized by using scanning electron microscopy.

Keywords Amoxicillin Trihydrate, Taste masking, Super disintegrates, Natural gums and Polyelectrolyte complexes

INTRODUCTION

Drug delivery systems intend to disintegrate within the buccal cavity such as mouth dissolving tablets, orally disintegrating tablets and chewable tablets are very popular due to patient compliance. In order to be successful, these dosage forms require to fulfill certain organoleptic properties among which taste is one of the major properties. Almost each active ingredient has an unacceptable taste. Few drug candidates are so intensely bitter and they require extensive processing to convert them into palatable dosage forms. There are two approaches to overcome the bad taste of drugs. The first one is reduction of drug solubility in saliva where a balance between reduced solubility and bioavailability must be achieved. Another method is to alter the ability of drug to interact with taste receptors. Fast dissolving tablets (FDTs) have received ever-increasing demand during the last decade and the field has become a rapidly growing area in the pharmaceutical industry [1].

Recent advances in novel drug delivery systems (NDDS) aims to enhance safety and efficacy of drug molecule by formulating a convenient dosage form for ease of administration and to achieve better patient compliance. These dosage forms are placed in the mouth, allowed to disperse or dissolve in the saliva. They release the drug as soon as they come in contact with the saliva, thus obviating the need for water during administration [2]. Despite of tremendous advancements in drug delivery, the oral route remains the perfect route for the administration of therapeutic agents because of low cost of therapy, ease of administration, accurate dosage, self-medication, pain avoidance, versatility, leading to high levels of patient compliance. Tablets and capsules are the most popular dosage forms [3]. Often times people experience inconvenience in swallowing conventional dosage forms such as tablet when water is not available, in the case of the motion sickness (kinetosis) and sudden episodes of coughing during the common cold, allergic condition and bronchitis. For these reason, tablets that can rapidly dissolve or disintegrate in the oral cavity have attracted a great deal of attention [4].

Therefore for the past one decade, there has been an enhanced demand for more patient friendly and compliant dosage forms. As a result the demand for developing new technologies has been increasing enormously. Since the development cost of a new drug molecule has been very high, effort are now being made by pharmaceutical companies to focus on the development of new drug dosage forms for existing drugs with improved safety and efficacy together with reduced dosing frequency [5]. To fulfill the medical needs and to overcome these drawbacks, fast dissolving tablets (FDTs) or orally disintegrating tablets (ODT) has emerged as alternative oral dosage forms. These are novel types of tablets that disintegrate in saliva within few seconds [6]. Antibiotics are prescribed by doctors for the treatment of mild to moderate infection, which

should be taken for a minimum time interval of 3-5 days. Some patients e.g. hectic community, travelled community are not able to take the complete course due to some reasons .So fast dissolving tablet of antibiotics are very acceptable dosage form which are helpful to recover the patient from a infectious disease. Amoxicillin Trihydrate, a beta-lactum antibiotic, was selected as the model drug as it was widely used as a first line treatment of mild to moderate infection of ENT (ear, nose and throat), respiratory tract, and skin and genitor- urinary tract.

Amoxicillin is 80% absorbed by oral route with good efficacy, safety and limited adverse effect. The objective of the study was to choose the best superdisintegrant by comparative evaluation, which gives a FDT of least disintegration time and good drug release profile. Hence in the present investigation the main objective is to study the association between selected natural polymers like gum karaya, huppu gum, neem gum and chitosan. Polyelectrolyte complexes of amoxicillin were prepared using the selected natural polymers like gum karaya, huppu gum, neem gum and chitosan and developed to formulate orally dispersible tablets of amoxicillin trihydrate. The prepared batches of different tablets were evaluated for uniformity of weight thickness, hardness, friability, disintegration test and in vitro dissolution study with tablets containing combination of crosscarmellose sodium and crospovidone as super disintegrates.

MATERIALS AND METHODS

Amoxicillin trihydrate and super disintegrates like Sodium Starch Glycolate (SSG), Crosscarmellose Sodium and Crospovidone were obtained from the department of gitam institute of pharmacy and the Polyelectrolyte Complexes like Gum Karaya, Neem Gum and Hupu Gum was procured from the A.P. Girijan Corporation, Visakhapatnam.

Standard Calibration Curve

The standard solution of amoxicillin was subsequently diluted with water to obtain a series of dilutions containing 5, 10, 15, 20 and 25µg/ml of amoxicillin solutions. The absorbance of these solutions was measured in Elico SL-191 UV-Visible spectrophotometer at 272 nm using purified water as blank. The absorbances were plotted against concentration of amoxicillin as shown in Figure. 1. This calibration curve was used in the estimation of amoxicillin in the present study.

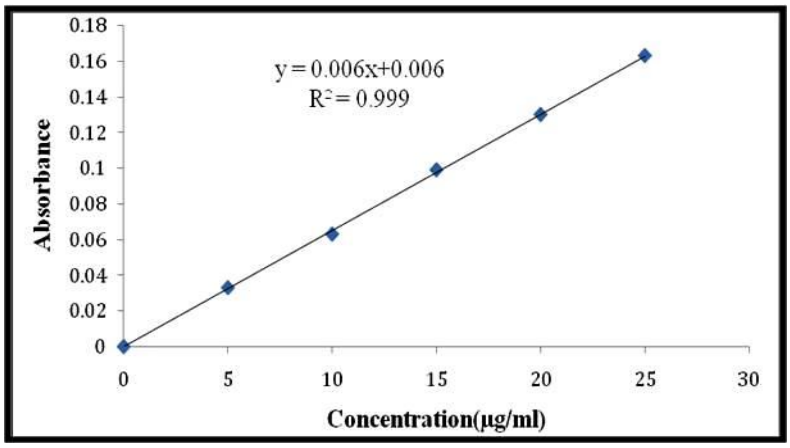

Figure. 1 Calibration curve for the estimation of amoxicillin

Characterization of Association between selected Poly Electrolyte Polymers

Association behavior of selected polymer like neem gum with chitosan was calculated by conductivity and pH studies.

Conductivity and pH Studies

In order to determine the concentration ratio of chitosan to neemgum, conductivity and pH studies of neemgum should be done. In 3 conical flasks add 100mg of neemgum and dissolve in phosphate buffer pH-3, Phosphate buffer pH-5 and phosphate buffer-7.Titrate the contents of the conical flask against chitosan solution. The pH and conductivity were determined as the volume of chitosan is run down for every 0.2ml. A plot is made against conductivity vs. volume of chitosan consumed. As there is a precipitate formation in the solution, there will be a steep raise in the graph which will be taken as end point.

Preparation of amoxicillin trihydrate dispersible tablets

Dispersible tablets of amoxicillin trihydrate were prepared by direct compression technique. All the ingredients were weighed as same specified in the formula. Drug diluents, lubricant, disintegrant and polyelectrolyte complexes were passed through sieve 80. The drug was first mixed homogeneously with polyelectrolyte complex, diluent and disintegrant in a mortar and pestle and the required degree of fitness was attained. Finally flavor, talc and magnesium stearate were added and mixed the resultant blends were directly compressed using 13mm flate punches with tablet weight 250 mg in a multipunch rotatory machine. A batch size of 10 tablets was prepared in each formulation. Formulation for the preparation of amoxicillin trihydrate dispersible tablets was represented clearly in Table. 1.

Table 1: Formulae for preparation of amoxicillin trihydrate dispersible tablets

Ingredients	F1 (mg)	F2 (mg)	F3 (mg)	F4 (mg)	F5 (mg)	F6 (mg)	F7 (mg)	F8 (mg)	F9 (mg)
Amoxicillin Trihydrate	125	125	125	125	125	125	125	125	125
Microcrystalline Cellulose	25	25	25	25	25	25	25	25	25
Chitosan	2	2	2	2	2	2	2	2	2
Gum Karaya	30	-	-	30	-	-	30	-	-
Neem Gum	-	30	-	-	30	-	-	30	-
Hupu Gum	-	-	30	-	-	30	-	-	30
Crosscarmellose Sodium	20	20	20	-	-	-	-	-	-
Crospovidone	-	-	-	20	20	20	-	-	-
Sodium Starch Glycolate	-	-	-	-	-		20	20	20
Sodium Saccharin	5	5	5	5	5	5	5	5	5
Vanillin	5	5	5	5	5	5	5	5	5
Talc	2	2	2	2	2	2	2	2	2
Magnesium stearate	2	2	2	2	2	2	2	2	2

Characterization of amoxicillin and polyelectrolyte complexes

FTIR –Spectroscopy

Fourier transform infrared spectroscopy (FTIR) is a simple technique for the detection of changes within excipient – drug mixture. Disappearance of an absorption peak or reduction of the peak intensity combined with the appearance of new peaks give a clear evidence for interactions between drug and excipient. FTIR spectra of drug and excipients were mixed in combinations and were obtained by the conventional KBr disc/pellet method. The sample was grounded gently with anhydrous KBr and compressed to form pellet. The scanning range was 400 and 4000 cm^{-1}.

Scanning electron microscopy (SEM)

Particle size of amoxicillin pure drug is a factor of prime importance. The surface morphology and size distribution of amoxicillin were studied by SEM. A double-sided tape that was affixed

on aluminum stubs and the amoxicillin powder was spread on it. The aluminum stub was placed in a vacuum chamber of scanning electron microscope (XL 30 ESEM with EDAX, Philips, Netherlands). The morphological characterization of the samples was observed using a gaseous secondary electron detector (working pressure of 0.8 torr, acceleration voltage-30.00 KV) XL 30, (Philips, Netherlands).

Powder X Ray Diffraction (XRD)

The study was carried out using X-Ray Diffractometer using Cu kα radiation. The tube operated at position ▫2 Theta, copper (cu) 40 kV, 20mA and data was collected over an angular range from 5 to70 .2θ of the diffraction angle in continuous scan mode using a step size of 0.02 .2θ and a time of 0.2 s.

EVALUATION TESTS

The prepared tablets were evaluated as per standard procedure to various quality control tests such as uniformity of weight, thickness (vernier caliper), hardness (Pfizer hardness tester), friability (Roche friabilator), drug content and *in vitro* dissolution studies.

Uniformity of weight

For uniformity of weight, 20 tablets were selected at random, weighed together and then individually [9]. The mean and standard deviation were determined.

Hardness

Five tablets were selected at random and the hardness of each tablet was measured using Monsanto hardness tester [10].

Friability

The friability test was carried out in Roche Friabilator [9]. Twenty tablets were weighed (w_o) initially and put in a rotating drum. Then, they were subjected to 100 falls of 6 inches height (25 rpm for four minutes). After completion of rotations, the tablets were dedusted by using camel hair brush and weighed (w). The percent loss in weight or friability (f) was calculated by the formula given below.

$$f = \left(1 - \frac{w}{w_0}\right) x100$$

Drug content estimation

Amoxicillin content of all the prepared tablets was estimated by the following procedure. Weigh the single tablet of each batch was taken and transferred into a 100 ml volumetric flask. 50 ml of purified water was added and vigorously shaken for 15 minutes. The solution was then sonicated for 15 minutes. After this the solution was kept aside for 15 min for equilibration and made up to volume with water. The resulted solution was filtered through 0.45 μm filter paper and suitably diluted and the drug content was estimated spectrometrically by measuring the absorbance at 272 nm [11, 12].

Taste evaluation

The taste of prepared tablets was evaluated manually by using a taste evaluation panel. Scoring was given for masking the taste and odour in the range of 0 to 5 from least to highest.

Dissolution studies

In vitro dissolution studies were carried out in 900 ml of purified using USP XXIV type-II (Paddle) dissolution rate test apparatus (Model L6, M/S Electrolab). A speed of 50 rpm and a temperature of 37±1°C were used in each test. Amoxicillin tablets were added to each vessel and the dissolution test was conducted. A 5 ml aliquot was withdrawn at different time intervals, filtered and replaced with 5 ml of fresh dissolution medium. The filtered samples were suitably diluted whenever necessary and assayed for amoxicillin by measuring absorbance at 272 nm [13]. All the dissolution experiments were conducted in triplicate and the mean values are reported.

Drug release kinetics

The analysis of the mechanism of drug release from pharmaceutical dosage form is an important but complicated problem and is practically evident in case of multi particulate dosage form. The dissolution data obtained was fitted to zero order [14, 15] first order [16, 17], Higuchi [18] to understand the order and mechanism of amoxicillin release from the PEC.

Zero order release kinetics

It defines a linear relationship between the fraction of drug released versus time. It is caluculated using equation $Q = k_o t$; where, Q is the fraction of drug released at time t and k_o is the zero order release rate constant. A plot of the fraction of drug released against time will be linear if the release obeys zero order release kinetics.

First order release kinetics

Exposed surface area of a tablet decreased exponentially with time during dissolution process, suggested that drug release from most slow release tablets could be described adequately by apparent first-order kinetics. The equation used to describe first order kinetics is**,** $\ln (1-Q) = -k_1 t$ where, Q is the fraction of drug released at time, (t) and k_1 is the first order release rate constant. Thus, a plot of the logarithm of the fraction of drug remained against time will be linear if the release obeys first order release kinetics.

Higuchi equation

It defines a linear dependence of the active fraction released per unit of surface (Q) on the square root of time. $Q = k_2 t^{½}$; where, k_2 is the release rate constant. A plot of the fraction of drug released against square root of time will be linear if the release obeys Higuchi equation.

Erosion equation

This equation defines the drug release based on erosion alone. $Q = 1-(1-k_3 t)^3$**;** where, Q is the fraction of drug released at time t, k_3 is the release rate constant. Thus, a plot between $[1-(1-Q)^{1/3}]$ against time will be linear if the release obeys erosion equation.

RESULTS AND DISCUSSION

Conductivity and pH Studies

The conductivity and pH studies were done with neem gum with chitosan solution at different buffer solutions and the results shown in Table 2. Conductivity studies of neem Gum with chitosan at different pH were represented in Figure. 2. pH studies of neem Gum with chitosan at different pH were represented in Figure. 3. The conductivity values of neem gum with chitosan at pH 3, pH 5, pH 7 and 0.1N HCl were decreased and increased at certain levels. These results suggested that the neemgum and chitosan must be taken in the ratio of 15:1

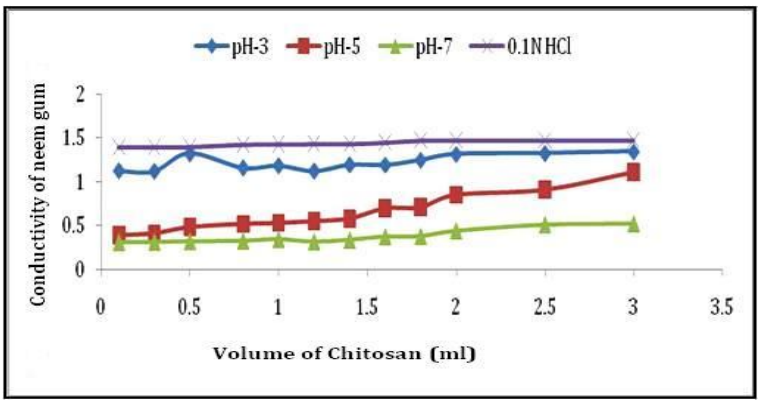

Figure. 2 Conductivity studies of neem gum with chitosan at different pH

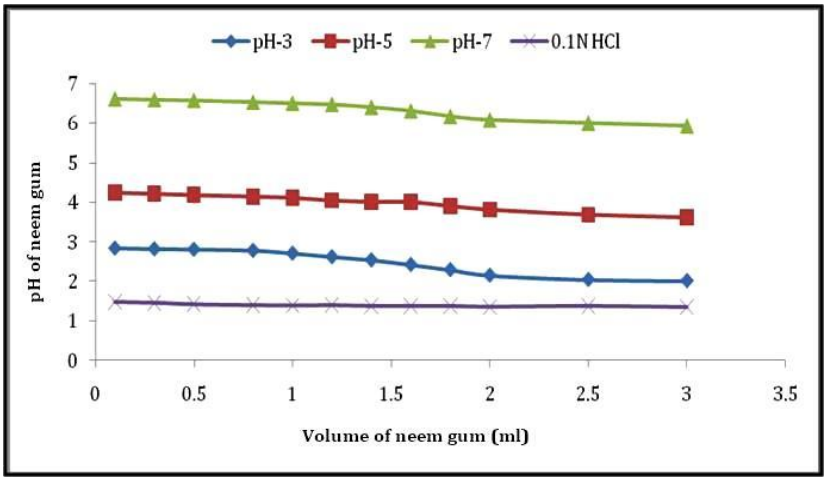

Figure. 3 pH studies of neem gum with chitosan at different pH

Table 2: Conductivity Studies with Neem gum in different buffers

Vol. of chitosan (ml)	pH-3		pH-5		pH-7		0.1N HCl	
	Conductivity	pH	Conductivity	pH	Conductivity	pH	Conductivity	pH
0.1	1.124	2.84	0.391	4.24	0.31	6.62	1.392	1.48
0.3	1.118	2.82	0.414	4.21	0.314	6.6	1.392	1.46
0.5	1.32	2.81	0.484	4.18	0.321	6.58	1394	1.42
0.8	1.158	2.78	0.521	4.14	0.328	6.54	1.421	1.4
1	1.182	2.71	0.531	4.11	0.346	6.51	1.424	139
1.2	1.122	2.62	0.552	4.04	0.318	6.48	1.428	1.4
1.4	1.192	2.54	0.582	4.01	0.338	6.41	1.428	1.38
1.6	1.19	0.42	0.699	4	0.376	6.32	1.444	1.38
1.8	1.246	2.29	0.712	3.9	0.38	6.18	1.468	1.38
2	1.312	2.15	0.854	3.81	0.442	6.09	1.468	1.36
2.5	1.322	2.04	0.912	3.68	0.512	6.01	1.468	1.38
3	1.342	2.01	1.114	3.61	0.524	5.94	1.47	1.35

FTIR Spectroscopy

FTIR revealed the functional groups responsible for the interaction of amoxicillin with polymers. Functional groups present in the amoxicillin and chitosan were represented in Figure. 4a and 4b. Functional groups present in the mixture of amoxicillin with polymers (chitosan and neem gum) were represented in figure. 4c. Functional groups revealed that there is no chemical interaction between the selected excipients and the drug. Table. 3 shows some of important functional groups.

Table 3: FTIR Studies of Amoxicillin & Amoxicillin with polymers

Functional Group	IR band of Amoxicillin cm^{-1}	IR band of Amoxicillin with polymers cm^{-1}
COOH	3041	3040
C=O	1775	1770
R-CO-NH_2	1606	1600
R-NH_2	3448	3455

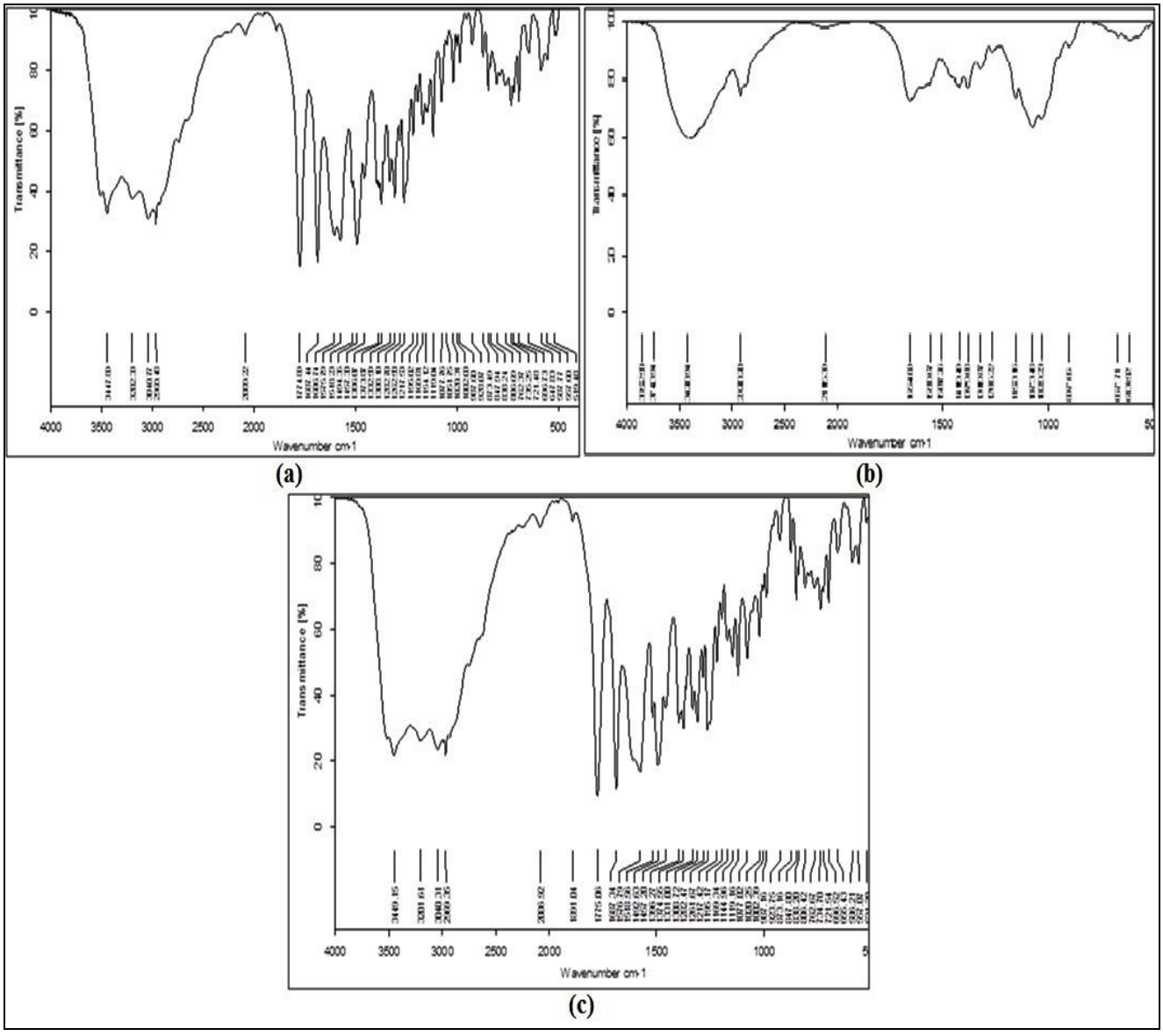

Fig 5: FTIR-Spectroscopy of (a) A moxicillin (b) Chitosan and (c) Amoxicillin+Neem+Chitosan

SEM Analysis

The SEM photographs for amoxicillin, neem gum, chitosan and combination of amoxicillin, with neem gum and chitosan were shown in figure. 5. The porous structure of PEC indicated encapsulation of the drug.

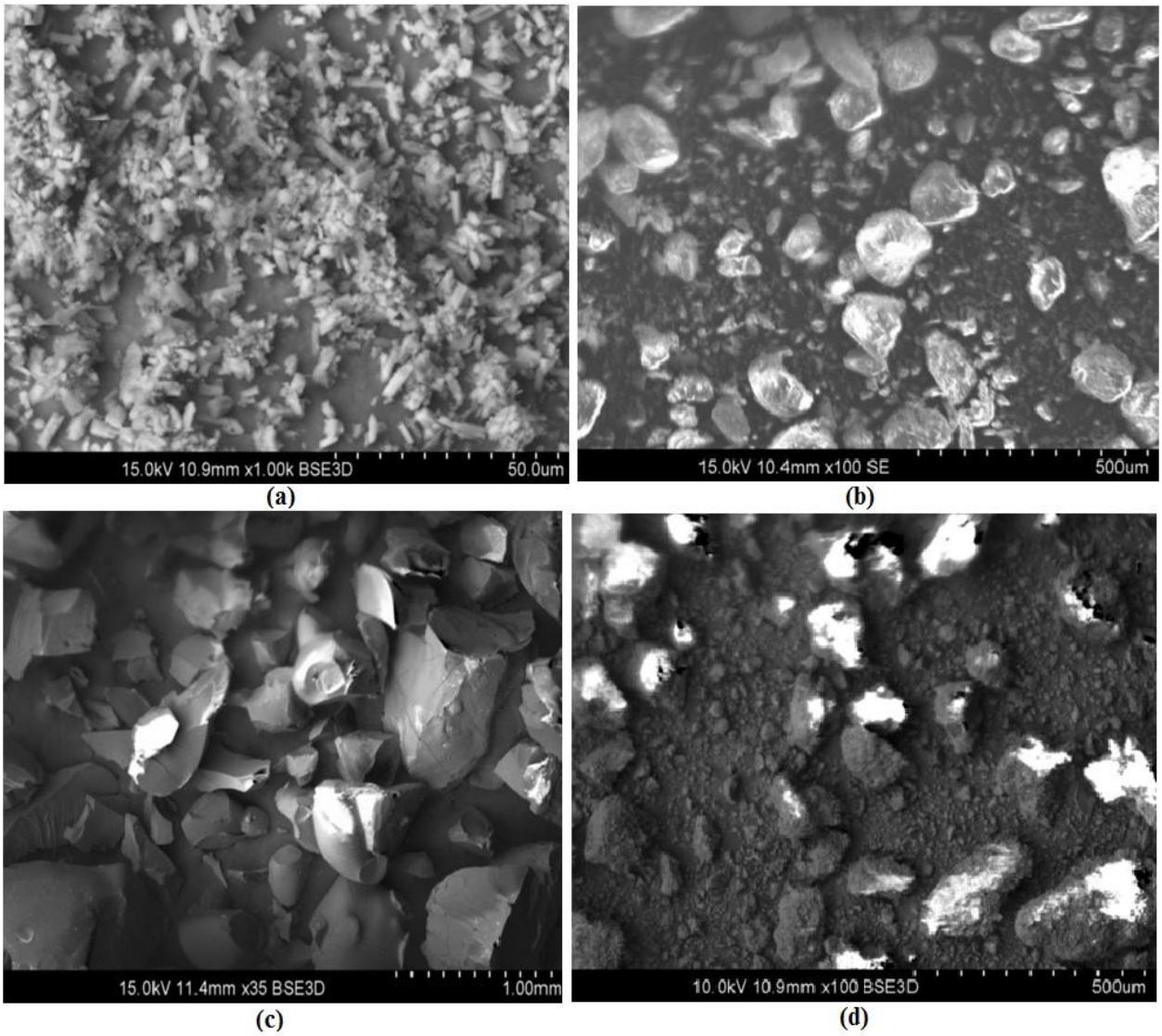

Figure. 5 SEM images of (a) Amoxicillin (b) Chitosan (c) Neem Gum & (d) Amoxicillin+Neem+Chitosan

X-Ray Diffraction (XRD)

Predicted XRD pattern of crystal form shown in figure 6 which was different from its pure drug powder PXRD pattern; this indicates the formation of polyelectrolyte complexes of amoxycilin trihydrate with polymers.

By comparing the graphs, each graph showing 100% relative intensity at different 2θ ranges, which shows clearly that the formulated. The XRD patterns of drug with polymer showed less

intensity of crystalline peak compared to pure drug. This further indicates the encapsulation of drug by PEC.

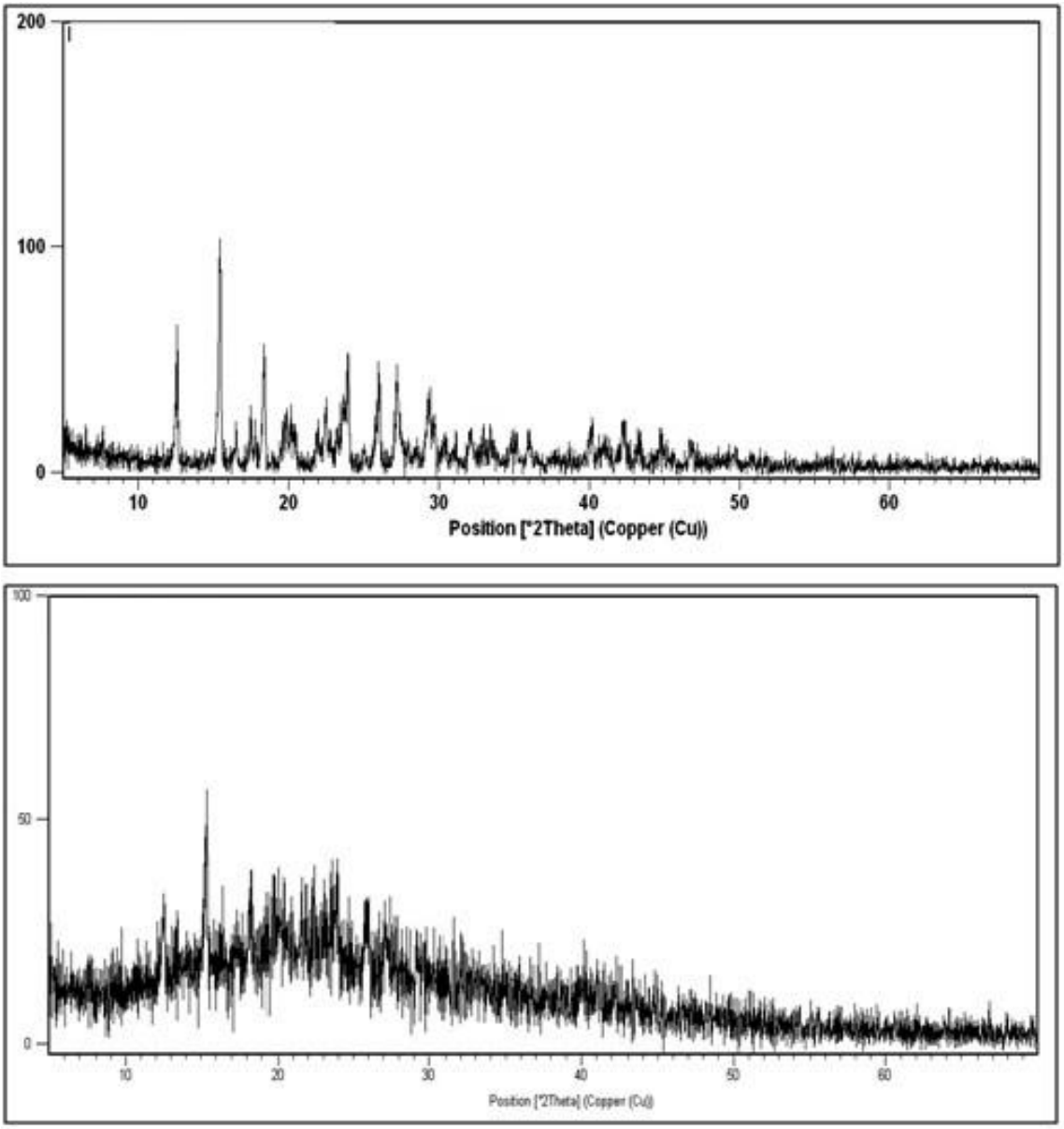

Figure. 6 XRD of (a) Pure Amoxicillin and (b) Formulation F3

Hardness, friability and uniformity of weight

There was no difficulty in the preparation of the amoxicillin trihydrate tablets by direct compression using PEC. Quality control tests such as uniformity of weight, hardness and friability for all the formulations were carried out and the results are given in Table 4. The tablets prepared in each batch showed uniformity of weight and the weight variation of the tablets was within the limits (as per IP Not more than two of the individual weights deviate from the average

weight by more than 5% for the tablets with average weight more than 250 mg and 7.5% for the tablets with average weight more that 80 mg but less than 250 mg and none deviates by more than twice the stated percentage). All prepared tablets showed good strength. The hardness for amoxicillin trihydrate tablets was in the range of 6-10 kg/cm^2 for and 8-11 kg/cm^2 and for the tablets with SSG disintegrant. The friability values were found to be less than 1% for all the prepared batches of tablets.

Table 4: Evaluation tests of Amoxicillin Trihydrate Dispersible Tablets

Parameters	F1	F2	F3	F4	F5	F6	F7	F8	F9
Weight variation (%)	4.26	4.20	4.10	4.26	4.26	4.3	4.0	4.5	4.30
Thickness (mm)	3.0	3.0	3.2	3.5	3.0	3.5	3.3	3.3	3.6
Hardness (kg/cm^3)	8	7	9	8.5	9	8	10.5	9	10
Friability (%)	0.55	0.65	0.50	0.35	0.40	0.26	0.55	0.60	0.45
Disintegration time (min)	5	10	13	4	6	9	7	12	20

Drug content

The percent drug content (%) of the F-1, F-2, and F-3 was found to be 94.16 ± 1.41, 95.93 ± 1.56, and 97.36 ± 0.92 respectively. The drug loading efficiency of F-1, F-2, F-3, F-4, F-5 and F-6 tablets was 94.16%, 95.93%, 97.36%, 91.85%, 90.69% and 92.27% respectively. And the drug loading efficiency of F-7, F-8 and F-9 was 81.21%, 80.25%, 83.25%. Low standard deviation values in drug content indicated the uniformity of drug content in the prepared tablets by using polyelectrolyte. The drug loading efficiency values for all the tablets was high indicating that there was no loss of drug during the process of complexation and direct compression.

Taste evaluation

Taste and odour masking capacity of amoxicillin tablets was evaluated by manual taste panel. The results are shown in Table 5. The results indicated the F-1, F-2, F-3, F-4, F-5 and F-6 formulations which contain PEC like gum karaya, neem gum and hupu gum. The super disintegrants croscarmellose sodium and crospovidone could mask the taste and obnoxious smell of amoxicillin to the best.

Table 5: Taste evaluation of amoxicillin tablets

Formulation	Taste mask grading							
	Taste				Odour			
	Trial-1	Trial-2	Trial-3	Avg	Trial-1	Trial-2	Trial-3	Avg
F-1	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
F-2	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0
F-3	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
F-4	3.5	4.0	3.5	3.5	5.0	5.0	5.0	5.0
F-5	4.0	4.0	4.5	4.1	5.0	5.0	5.0	5.0
F-6	4.5	5.0	4.5	4.6	5.0	5.0	5.0	5.0
F-7	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0
F-8	3.0	3.5	3.5	3.3	4.0	4.0	4.0	4.0
F-9	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0

Note: Score for taste: 0- poor, 3 good, 5 best **Score for odor:** 0- poor, 3 good, 5 best

Dissolution studies

The results of *in vitro* dissolution studies as shown in Figure 7 and indicated that release of amoxicillin trihydrate was uniform for a period of 1 hrs from the tablets prepared by using PEC. In case of F-1, F-2 and F-3 tablets released 82.26%, 86.41%, 88.14% of amoxicillin trihydrate in 45 minutes and 74.67%, 72.34%, 79.30%, 72.42%, 70.31% and 70.97% drug was released in 45 minutes from F-4, F-5, F-6, F-7, F-8 and F-9 tablets respectively. F-3 formulation with croscarmellose sodium showed 97.36% of amoxicillin trihydrate release in 1 hour, and 94.16%, 95.93%, 91.85%, 90.69% and 92.27% drug was released in 1 hour from F-2, F-3, F-4, F-5 and F-6 tablets respectively. And the 81.21%, 80.25% and 83.62% was released from the F-7, F-8 and F-9 tablet formulations.

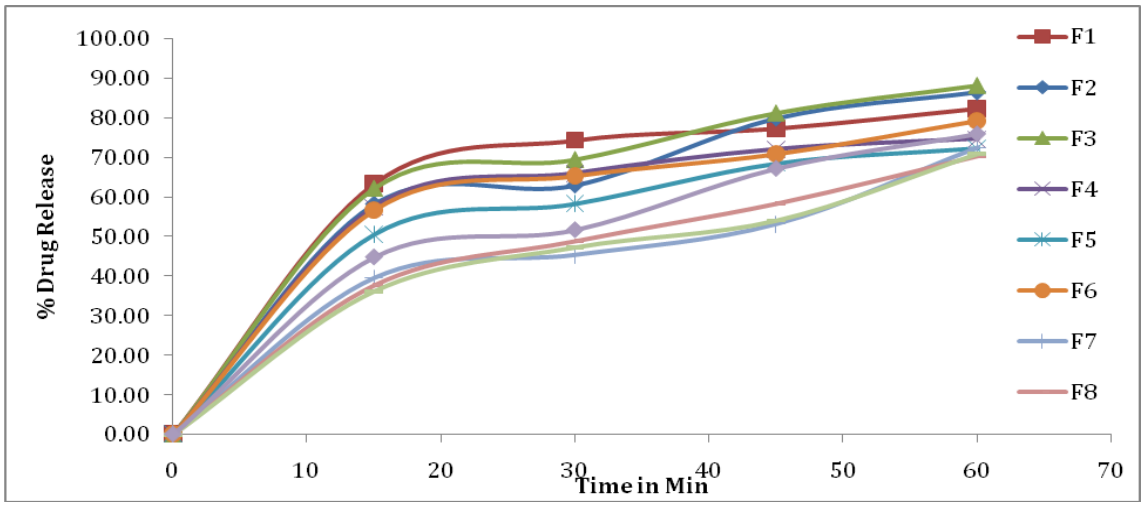

Figure. 7 Dissolution profiles of prepared Amoxicillin Trihydrate dispersible tablets

The kinetics of dissolution release profile of amoxicillin trihydrate formulation was subjected for zero order, first order, Hixson-Crowell equation Higuchi diffusion and erosion equation and the correlation coefficient (r) values are given in Table 6. The results showed that amoxicillin tablet formulations followed first order release kinetics as indicated by the correlation coefficient 'r' values (r = 0.906 to 0.979). The results also indicated that the release best fits to Higuchi diffusion (r=0.896 to 0.983) showing the particulate dissolution nature of amoxicillin tablets. The release rate ($k_1$value) shown in Table 6.

Table 6: Different release kinetics of amoxicillin from PEC

Formulation	Correlation coefficient (r2)				Release rate k (min^{-1})
	Zero order	First order	Hixson Crowel's	Higuchi equation	
F-1	0.692	0.906	0.657	0.896	1.865
F-2	0.810	0.964	0.760	0.953	1.951
F-3	0.773	0.952	0.720	0.936	1.948
F-4	0.702	0.889	0.707	0.919	1.898
F-5	0.775	0.915	0.787	0.958	1.939
F-6	0.751	0.934	0.707	0.941	1.912
F-7	0.887	0.974	0.881	0.985	1.965
F-8	0.899	0.982	0.870	0.996	1.950
F-9	0.908	0.979	0.907	0.994	1.979
Marketed	0.874	0.976	0.832	0.983	1.937

CONCLUSION

Amoxicillin Trihydrate have bitter and objectionable taste when administered orally so they are required to be suitably taste masked as they effect patient compliance & acceptance of the dosage form. The taste masking of amoxicillin in this project is carried out by polyelectrolyte complexation technique by using oppositely charged polymers, such as anionic and cationic polymers i.e neem gum, gum karaya and hupu gum respectively. These anionic & cationic polymers have opposite charges they form complexes in the aqueous medium. Thus these complexes precipitate and help in the encapsulation of the drug and facilitate taste masking of the drug.

The results of the study showed that the electrostatic interaction between the selected polymers was good and they could form very good polyelectrolyte complexes. The entrapment of amoxicillin was very good which is indicated by high drug content values. Uniformity in drug content values indicated the reproducibility of the process. The taste evaluation report indicated

that the prepared dispersible tablets are free from obnoxious and unpleasant taste. The drug release studies showed that the dissolution from the dispersible tablets was uniform. The results indicated that among the nine formulations F-3 by using Croscarmellose sodium as super disintegrent showed highest percentage of drug release in 60 min. It can be concluded from the study that polyelectrolyte complex tablets prepared by using different gums have shown better taste masking of amoxicillin with good dissolution. Hence polyelectrolyte complex technique can be utilized as a potential tool in the design of taste masked drug delivery systems.

Conflict of interest

All authors declare that there is no conflict of interest.

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