The present work was carried out to investigate the potential methods of taste masking of anti depressant drug Paroxetine hydrochloride. Also the secondary aim was to study weather this taste masking techniques can be subsequently introduced to the various dosage forms. And weather this formulations can be administered to patients with out their knowledge.

The various techniques studied and the formulation prepared is as follows

1) Taste masking by encapsulation with Cyclodextrin:
   a) Liquid dosage form
   b) Fast Dispersible Tablets by direct compression
   c) Fast dispersible tablets by Lyophilisation
   d) Fast Dispersible films

2) Taste masking by preparing solid lipid Nanoparticles
   a) Fast dispersible Tablets by Lyophilisation

3) Taste masking by complexation with resins
   a) Fast Dispersible films

4) Taste masking by encapsulation in pellets.
   a) Sustained release fast dispersible Tablets
   b) Chocolate dosage form

5) Taste masking by using swellable matrix
   a) Gel dosage form

1) Taste masking by Encapsulation with Cyclodextrin:

The complexation of Paroxetine hydrochloride with cyclodextrin was found to be satisfactory. This was proved by various techniques such as IR, DSC & XRD. Taste masking with Cyclodextrin was found to be satisfactory which was proved by both Invivo and invitro methods. Both β Cyclodextrin and HP β Cyclodextrin yielded almost tasteless complexes of Paroxetine hydrochloride but taste masking efficiency was not 100 %. Taste masking efficiency of β Cyclodextrin was found to be more than HP β Cyclodextrin.
a) Liquid dosage form: The taste masked complex of β Cyclodextrin was used to prepare Liquid dosage form. The slight bitter taste of the complex was further reduced by use of sweeteners and Flavourants. The final syrup was found to be palatable. The formulations followed all the specifications given for a syrup dosage form officially. From the studies on discreet administration in patients it was concluded that the liquid dosage form can be administered to the patients without their knowledge.

b) Fast Dispersible Tablets: The taste masked complex of β Cyclodextrin was used to prepare Fast dispersible Tablets. The slight bitter taste of the complex was further reduced by use of sweeteners and Flavourants. The technique of using super disintegrants was found to be satisfactory in producing the desired dispersion characteristics. The formulations followed all the specifications given for a Dispersible tablets officially. From the studies on discreet administration in patients it was concluded that the fast dispersible tablets can be administered to the patients without their knowledge.

c) Lyophilised fast dispersible tablets: The taste masked complex of β Cyclodextrin was used to prepare Lyophilized fast dispersible tablets. The slight bitter taste of the complex was further reduced by use of sweeteners and Flavourants. The desired hardness and disintegration properties can be achieved by using diluents and binders along with disintegration enhancers. The formulations followed all the specifications given for a dispersible tablets officially. The Lyophilised FDTs yielded tablets with better palatability than those prepared by direct compression. From the studies on discreet administration in patients it was concluded that the liquid dosage form can be administered to the patients without their knowledge.

d) Fast dispersible films: The taste masked complex of β Cyclodextrin was used to prepare fast dispersible film. The slight bitter taste of the complex was further reduced by use of sweeteners and Flavourants. The
formulations followed all the specifications given for a film officially. This study revealed, successful application of $2^3$ full factorial designs for the formulation of oral fast dissolving films drug delivery. The Pullulan based fast-dissolving film of paroxetine hydrochloride obtained by the solvent casting method showed acceptable mechanical characteristics and satisfactory % drug release along with good taste. From the studies on discreet administration in patients it was concluded that the fast dispersible films prepared by complexation with cyclodextrin form can be administered to the patients without their knowledge.

2) Taste masking using solid lipid nanoparticles:
Trimepristin, tripalmitin and tristearin SLN of paroxetine hydrochloride prepared with ease using hot homogenization followed by ultrasonication method and this method can be transformed to large scale by High pressure homogenization. The DSC and XRD thermograms of trimepristin, tripalmitin and tristearin SLN shows that paroxetine hydrochloride was not in crystalline state indicating that drug has been encapsulated and taste has been masked. In Vitro release of paroxetine hydrochloride in phosphate buffer pH 7 indicates that there is no burst release and drug is completely entrapped in lipid matrix and sufficient taste masking has been achieved. Among three different triglycerides tristearin solid lipid nanoparticles shows good results with respect to taste particle size, zeta potential, assay, entrapment efficiency, in vitro drug release and other evaluation parameters.

a) Lyophilised fast dispersible tablets: The lyophilized fast dispersible tablets were prepared by using SLN prepared by tristearin. The desired hardness and disintegration properties can be achieved by using diluents and binders along with disintegration enhancers. The formulations followed all the specifications given for dispersible tablets officially. The lyophilised FDTs of the SLN yielded tablets with much better palatability than those lyophilized FDTs prepared by Cyclodextrin complexation. From the studies
on discreet administration in patients it was concluded that the liquid dosage form can be administered to the patients without their knowledge.

3) Taste masking by complexation with resins:

The complexes of paroxetine hydrochloride were successfully formulated using Amberlite IRP64 resin, which was confirmed using XRD and DSC. The methods designed for drug resinate complexation were simple, rapid, cost effective, and highly efficient. The taste of the paroxetine hydrochloride after complexing with resin was found to be masked completely which was proved by both Invitro and Invivo methods

a) Fast dispersible films of Paroxetine resinate: The taste masked complex resinate was used to prepare fast dispersible films. The palatability of the complex was further improved in the films by the selection of suitable sweeteners and Flavourants. The formulations followed all the specifications given for a film officially. The Pullulan based fast-dispersing film of paroxetine hydrochloride resinate obtained by the solvent casting method showed acceptable mechanical characteristics and satisfactory % drug release along with good taste. From the studies on discreet administration in patients it was concluded that the fast dispersible films prepared by complexation with amberlite resin can be administered to the patients without their knowledge.

4) Taste masking by encapsulation in pellets.

a) Sustained release fast dispersible Tablets: The present study demonstrated that paroxetine hydrochloride can be successfully encapsulated in pellet dosage form by extrusion spheronisation. Further the release of the drug can be successfully controlled by coating the pellets with a combination of Eudragit L 100 and hydroxy propyl methyl cellulose phthalate. The Coated pellets can be successfully formulated into fast dispersible tablets by direct compression technique without affecting the release profile of the pellets. The prepared fast
dispensible tablets can substitute the conventional controlled release tablets as the fast dispersible tablets are bioequivalent to the commercially available market brand. The administration of the controlled release tablets to the patients without their knowledge was also achieved satisfactorily by dispersing the tablets in fruit juices.

b) Chocolate dosage form: The present study demonstrated that paroxetine hydrochloride can be successfully encapsulated in pellet dosage form by drug loading and seal coating techniques. This technique yielded pellets with good palatability. The seal coated pellets were successfully incorporated into chocolate matrix and formulated in chocolate dosage form. The chocolates can be satisfactorily administered to the patients without their knowledge and the bitter taste of paroxetine hydrochloride remains to be masked in spite of chewing the chocolate dosage form.

5) Taste masking by using swellable matrix

a) Gel dosage form: Taste masking by incorporation of paroxetine hydrochloride in swellable matrix such as combination of gellan gum and pectin was found to be satisfactory. The gel holds the drug for sufficient time in the gel matrix while the dosage form is in the oral cavity and hence the bitter taste of paroxetine hydrochloride is not perceived. The palatability of the gel was further improved by using suitable flavourants and sweeteners.