SUMMARY OF THE RESEARCH WORK

- Paroxetine controlled-release tablets were prepared by wet granulation method using HPMC as retard releasing polymer.
- The standard graph of Paroxetine HCl has shown good linearity with an R2 value of 0.9994.
- The presence of all the characteristic peaks of the Paroxetine HCl indicates that no interaction occurred between the drug and the excipients.
- Post compression parameters like hardness and friability values showed that the tablets were mechanically stable.
- The percentage weight variation in all the formulations was found to be within pharmacopeial limits.
- From the preliminary batches, P6 was further selected for central composite design because it shows extended-role up to 12 hrs nearby the USP criteria.
- The central composite design formulation F3, F7, F9, F10, F11, F12, and F13 show a good release profile compared to other formulations and met near the USP criteria.
- The results of dissolution studies indicated that optimized formulation, the most successful of the study, exhibited a drug release pattern very close to the theoretical release profile. The designed matrix tablets of optimized formulation of paroxetine HCl, release 29.382%,41.29%, and 93.47% of the drug in the second, fourth, and twelfth hours.
- As comparing the optimized batch with the marketed product, the marketed product releases the drug for up to 8 hours whereas the optimized batch extended the release up to 12 hours.
- The release rate kinetic data for the optimized batch shows a drug release data was best explained by zero order equation, as the plots showed the highest linearity (R2= 0.9820), followed by Higuchi's equation (R2= 0.9767) and Fist order equation (R2= 0.9420).
- The corresponding plot (log cumulative percent drug release vs time) for the Korsmeyer-Peppas equation indicated a good linearity (R2= 0.9898). The diffusion exponent n was 0.6344, which appears to indicating a coupling of the diffusion and erosion mechanism (Anomalous diffusion) and may indicate that the drug release was controlled by more than one process.

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