

# Formulation of risperidone in floating microparticles to alleviate its extrapyramidal side effects

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## Abstract

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Risperidone is effective in the treatment of positive as well as negative symptoms of schizophrenia. But, there is a strong correlation between plasma levels of risperidone and its adverse effects.

### Objective

This study aimed to develop risperidone in floating microparticles to overcome its extrapyramidal side effects.

### Methods

Floating microparticles were prepared using Eudragit S100, hydroxypropylmethyl cellulose (HPMC), Gelucires (Gelucire 43/01 pellets, Gelucire 44/14 and Gelucire 50/13), Geleol mono and diglyceride NF, glyceryl monostearate, Compritol 888 ATO, methyl-beta-cyclodextrin (M CD) and hydroxypropyl-beta-cyclodextrin (HP CD), by emulsion solvent diffusion technique. In-vitro experiments were conducted to optimize formulation parameters regarding floating ability, yield value, drug loading and in-vitro release properties. The best formula was investigated for its in-vivo floating ability and for its pharmacokinetics as well as its extrapyramidal side effects in human volunteers.

### Results

The optimized floating microparticles showed promising in-vitro experiment performance with floating ability up to 95.93% for 12 h. Also, this floating ability was confirmed using in-vivo x-ray studies. Pharmacokinetics studies revealed significant ( $p < 0.05$ ) lower Cmax, longer Tmax and higher AUC values for the tablets (indicating gradually release properties which lead to high treatment efficacy of the drug with obvious reduced extrapyramidal side effects).

### Conclusion

These results proved that formulating risperidone as floating microparticles is a suitable dosage form for overcoming risperidone side effects.

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