Preface

In recent decade, central nervous system (CNS) disorders have been increasing enormously. In CNS disorders, schizophrenia is severe chronic debilitating psychological disease affecting approximately 1-2% of the world population. Asenapine maleate (ASM) is a newer antipsychotic drug. It is slightly soluble in water and classified as BCS class II drug. It is the first antipsychotic drug to be administered through a sublingual route of administration. The bioavailability of ASM is around 35% by sublingual route while it is <2% via oral route due to its high gastro-hepatic metabolism. The limiting factors with current dosage forms of ASM such as low bioavailability, drinking and eating restriction, twice a day dosing regimen and extra pyramidal side effect are still a very challenging task for pharmaceutical researchers. In the present work, nanostructured lipid carriers formulations with and without glycol chitosan coated were prepared which have improved brain availability and sustainability. The intranasal route for the delivery of nanocarriers was explored here for better targetability to brain. Formulations were prepared by quality by design (QbD) approach using Box-Behnken design. Both uncoated and coated formulations were characterized by *in-vitro* and *in-vivo* methods. The coated nanostructured lipid carriers (GC-ANLC) clearly demonstrated the superior pharmacokinetic and safety profile for better treatment of schizophrenia in rats. Data suggest that GC-ANLC via intranasal route is an efficient delivery route for targeting the brain with increase in bioavailability with corresponding decrease in dose and dosage frequency.