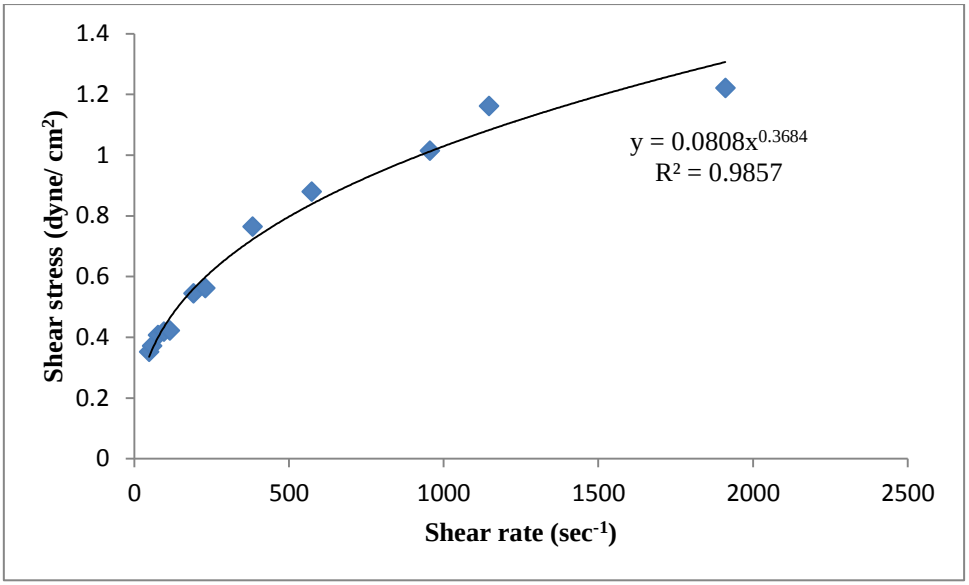
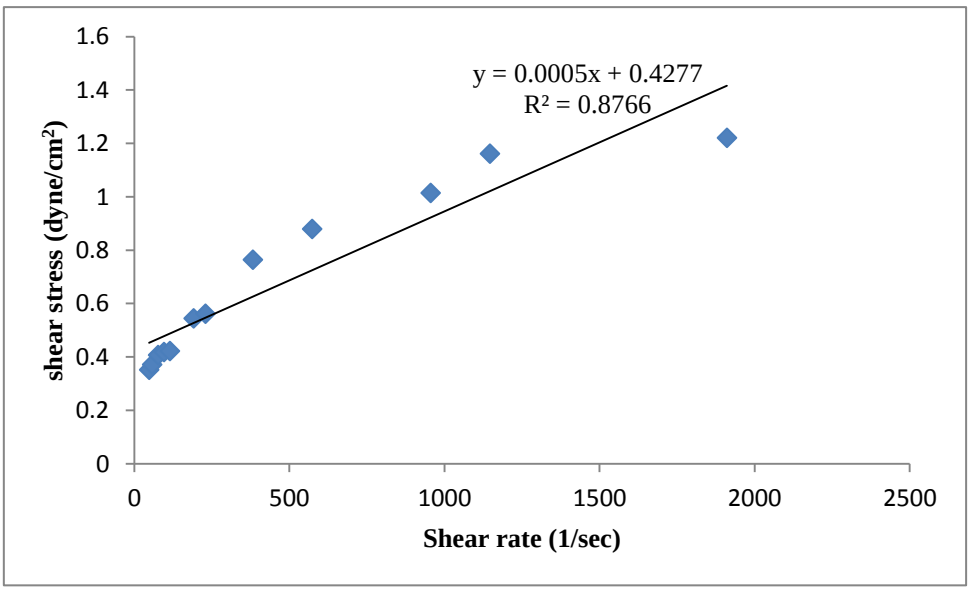
In-vitro release kinetic analysis results for selected formula gel (SF-gel)

Release mechanism	**Zero order**	**First order**	**Second order**	**Third order**	**Higuchi diffusion**
Equation	$C_t = C_0 - K\,t$	$\ln C_t = \ln C_0 - K\,t$	$\frac{x}{a\,(a-x)} = kt$	$\frac{3ax - x^2}{2a^2\,(a-x)^2} = kt$	$Q = \sqrt{D\,t\,(2\,A - Cs)Cs}$
Terms used	-(C_t) is the concentration of the drug remaining to be released at time (t) -(C_0) is the initial concentration of the drug -(K) is the release rate constant		-(X) is the concentration of the drug released at time (t) -(a) is the initial concentration of the drug		- (Q) is the amount of drug released per unit area at time (t) - (D) is the diffusion coefficient - (A) is the amount of drug present in the matrix per unit volume - (Cs) is the drug solubility in the matrix.
Obtained R^2 value	0.6525	0.5368	0.4280	0.3384	**0.849885**

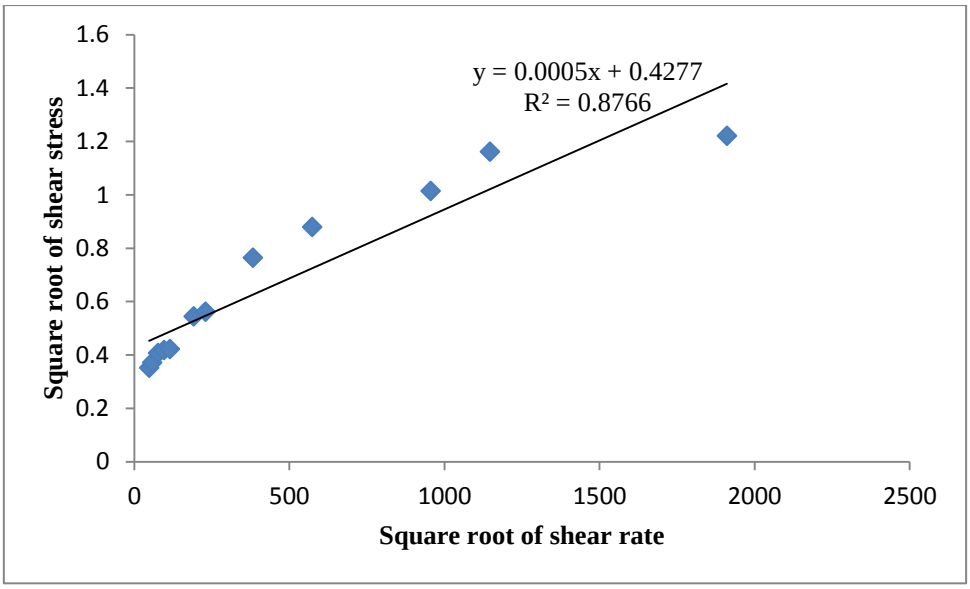


Relation between shear rate and shear stress of SF-gel (Power law plot)

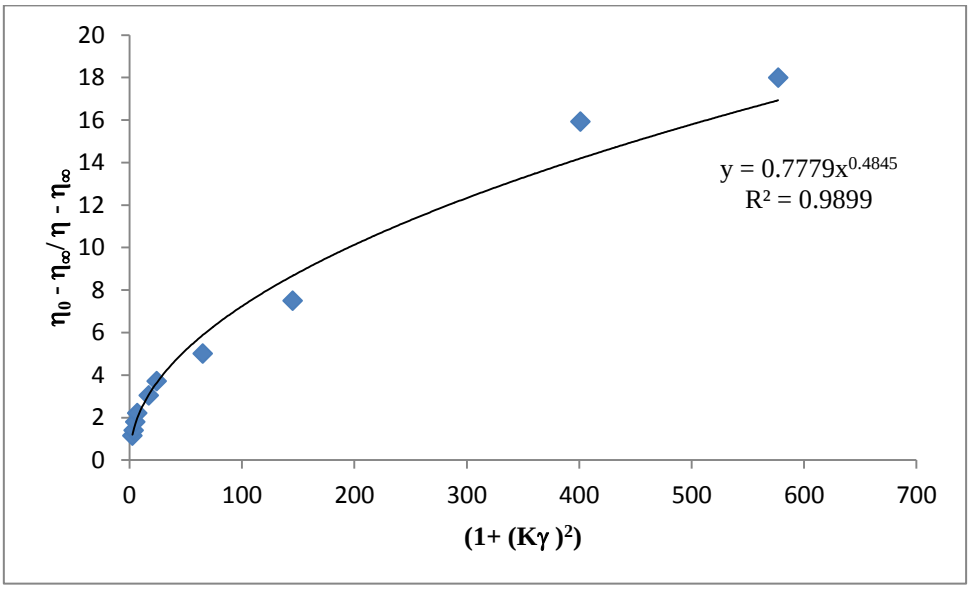
Curves for description of the non –Newtonian system



Bingham's plot



Casson's plot



Carreau's plot