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Synthesis and antiviral activity of 4,7-Phenantroline derivatives against RNA Viruses.

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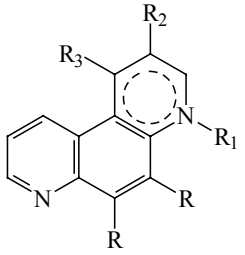
Viruses belonging to the Flaviviridae family cause significant diseases in humans and animals. HCV is a major cause of human hepatitis, globally. The World Health Organisation estimates that 170 million people worldwide are presently infected with this virus. Most infections become persistent and about 60% of cases develop chronic liver disease. Chronic HCV infection can lead to development of cirrhosis, hepatocellular carcinoma and liver failure. New therapies are clearly needed for infections caused by this virus family.

As part of our antiviral research programs, we have now planned a new synthetic pathway of 4,7-Phenantroline and derivatives (listed below) in order to evaluate whether any anti-flaviviridae activity can be envisaged for this type of molecules.



R = H, Cl;
R_1 = none, H, Alkyl;
R_2 = H, CO_2H, $CO_2C_2H_5$;
R_3 = H, =O, NH_2, HNCOAlkyl.

Preliminary *in vitro* data showed that 4,7-Phenantrolines are in general endowed with an interesting antiviral activity against BVDV, CVB-2, Sb-1and RSV, and other viruses that will be reported in the poster.

In order to get some insights into the potential viral molecular target of these compounds, we performed an explorative molecular modeling study to investigate the interaction between our compounds and the most probable target protein, the RNA-dependent RNA-polymerase (RdRp). To verify the validity of our computational approach, we also run a blank test on other RdRp non-nucleoside inhibitors, whose crystallographic structures in complex with HCV NS5B, and the corresponding IC_{50} values, were available from literature.