

Identification of Potential Inhibitors against the Virus: Chikungunya

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Description

Chikungunya virus is spread to the people by the bite of an infected mosquito. The most common symptoms of this infection involves fever and joint pains. Other symptoms may include a slight headache, muscle pain, joint swelling, or even rashes. Outbreaks have been occurred in the countries in Africa, Asia, Europe, and the Indian and Pacific Oceans. In late 2013, chikungunya virus was found for the first time in the Americas on the islands in the Caribbean. It is said that there is risk that this virus will be imported to the new areas by the infected travelers. Chikungunya virus spreads to the people through the bite of an infected mosquito. Mosquitoes bite during the day and the night. There is no vaccine to prevent chikungunya virus infection. The best way to prevent chikungunya is to protect ourselves from the mosquito bites.

Chikungunya virus (CHIKV) is one of the major viruses affecting the worldwide. Chikungunya is a vector borne disease transmitted to human by Aedes mosquitoes and affects people causing fever, severe joint pain and other symptom like rash, joint swelling, muscle pain. While many infected of CHIKV peoples recover within few day to month from primary illness, others suffer from persistent debilitating arthralgia that can last for months to years. It is a highly variable virus, having a rapid reproduction and a high evolution rate. No any specific drugs as well as vaccine are reported till date. It is much highlighted for its therapeutic issues. Hence, there is an urgent need to scrutinize potential therapies against CHIKV that are available at low price and do not have associate side effects. The search for various new bioactive compounds from the plants is a key part of the pharmaceutical research. CHIKV has two ORF codes for structural and non-structural proteins. Non-structural (nsP2) had a helicase, NTPase and protease activities which are play a key role in replication. In the current study, we applied a pharmacoinformatics-based approach for the identification of potential plant-derived compounds against CHIKV non-structural proteins (nsP2) using the molecular docking software (AutoDock) to find out the interaction between ligand and

proteins. The selected molecule or compound was further analyzed for pharmacokinetic (PK) and pharmacodynamics (PD) parameters based on in silico absorption, distribution, metabolism, excretion, and toxicity (ADMET) profile. The results showed the potential lead compounds that can be developed into commercial drugs having high binding energy with promising ADMET properties. In addition, this study may be helpful in the further experimental investigations.

Conclusion

Chikungunya virus is most often spread to people by the Aedes aegypti and Aedes albopictus mosquitoes. Most people recover fully, with symptoms resolving in three to 10 days. But for some people, joint pain may continue for the months, or even for years. Death from complications of chikungunya is considered very rare, but the virus sometimes causes severe problems, mostly in older adults with other chronic illnesses. People who have been infected once are likely to be protected from future infections.

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