

Geranium extracts inhibit HIV-1

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Pelargonium sidoides. Credit: Helmholtz Zentrum München

(Medical Xpress)—Extracts of the geranium plant *Pelargonium sidoides* inactivate human immunodeficiency virus type 1 (HIV-1) and prevent the virus from invading human cells. In the current issue of *PLOS ONE*, scientists from the Helmholtz Zentrum München report that these extracts represent a potential new class of anti-HIV-1 agents for the treatment of AIDS.

Scientists from the Helmholtz Zentrum München demonstrate that root extracts of the medicinal plant *Pelargonium sidoides* (PS) contain compounds that attack HIV-1 particles and prevent [virus](#) replication. A team spearheaded by Dr. Markus Helfer and Prof. Dr. Ruth Brack-

Werner from the Institute of Virology and Prof. Dr. Philippe Schmitt-Kopplin from the Analytical BioGeoChemistry research unit (BGC) performed a detailed investigation of the effects of PS extracts on HIV-1 infection of cultured [cells](#). They demonstrated that PS extracts protect blood and immune cells from infection by HIV-1, the most widespread type of HIV. PS extracts block attachment of virus particles to host cells and thus effectively prevent the virus from invading cells. Chemical analyses revealed that the antiviral effect of the PS extracts is mediated by polyphenols. Polyphenol mixtures isolated from PS extracts retain high anti-HIV-1 activity but are even less toxic for cells than the crude extract.

Safety of PS-extracts has been established in several clinical trials. In Germany PS extracts are licensed as a herbal medicine and used to reduce symptoms of acute bronchitis. Research group leader Brack-Werner says, "PS-extracts are a very promising lead for the development of the first scientifically validated phytomedicine against HIV-1. PS extracts attack HIV-1 with a mode-of-action that is different from all anti-HIV-1 drugs in clinical use. Therefore a PS-based phytomedicine may be a valuable supplement for established anti-HIV therapies. Furthermore, PS extracts are attractive candidates for increasing anti-HIV-1 therapy options in resource-limited settings, since they are easy to produce and do not require refrigeration. The results of our study and the proven safety of PS extracts encourages their testing in HIV-1 infected individuals as next step."

According to the World Health Organisation (WHO), more than 35 million people in the world are infected with HIV, the majority with HIV-1. Without treatment, HIV destroys the immune system and causes the acquired immunodeficiency syndrome (AIDS), which is a life-threatening disease. HIV/AIDS is one of the 10 leading causes of death worldwide.

More information: Helfer, M. et al. (2014), "The root extract of the medicinal plant *Pelargonium sidoides* is a potent HIV-1 attachment inhibitor." *Plos One*, [DOI: 10.1371/journal.pone.0087487](https://doi.org/10.1371/journal.pone.0087487)

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