Secondary plant products of *Parthenium hysterophorus* L. and their possible impact on human health in Ethiopia

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**Introduction**

*Parthenium hysterophorus* (parthenium) is a genus in the family Asteraceae. It is native to South America and the Gulf of Mexico. Parthenium is one of the worst weeds in countries where it has been introduced. After its introduction in Ethiopia it developed into an invasive weed and spread over the whole country within a few years. It causes direct losses to the grazing industry and is a human health hazard, causing allergic rhinitis and contact dermatitis. Human health impact is often associated with secondary plant metabolites found in parthenium such as partenin, a sesquiterpene lactone.

**Methods**

(1) Parthenium was sampled from different geographic areas in Ethiopia, India and Taiwan. Additionally, plants were cultivated in Ethiopia and Berlin under regular greenhouse conditions and under water stress. We assume that the secondary metabolite profile of parthenium will change in quantity and quality depending on water stress conditions. We analyzed the phenolic acids and partenin contents by HPLC.

(2) Furthermore we interviewed 64 Ethiopian farmers in four heavy infested regions to estimate the health impact of parthenium.

**Results**

The results show that the phenolic acid content is depending on plant compartment and growth location. In flowers we found the highest content of phenolic acids. The concentration of phenolic acids varies strongly depending on growth location.

**Conclusion**

Health problems with *P. hysterophorus* are in the literature often associated with partenin. Concentration of partenin differs between plant components and is depending on growth location. However, we found in addition to partenin high concentrations of phenolic acids which might also contribute to health problems. Most farmers dealing with *P. hysterophorus* report severe health problems. In further studies we are looking into the impact of single compounds for skin irritations and other health problems.

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