Anticonvulsant activity of herbal substances

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According to the International League Against Epilepsy (ILAE) data, epilepsy is one of the most common neurologic diseases. Scientists search for the ideal anti-seizure remedy that would be able to suppress seizures without causing any unwanted action. Therefore, a continuous improvement of anticonvulsant therapy, including a targeted search for new biologically active compounds in order to find the most pharmacologically active and safe anticonvulsants among them became rather important.

The experience of herbal medicine points to the fact that herbal products have several advantages in contrast with synthetic ones.

Earlier, 48 dry extracts of herbs-members of 8 families were studied to analyze their chemical composition, as well as anti- and proconvulsant activity, in an attempt to estimate the connection of the herbal products pharmacological effect and their phytochemical composition. Extracts were standardized by the content of alkaloids, flavonoids, phenolic acids, polyphenols, amino acids, and terpenoids using HPTLC, HPLC, UPLC, GC-MS, and NIR methods. GABAA-receptors blocker pentylenetetrazole was used as a convulsive agent.

Chemical analysis of the extracts showed a variety of components, as well as qualitative and quantitative composition heterogeneity. It should be noted that all herbal anticonvulsants without exception contain high concentrations of flavonoid rutin, in contrast to proconvulsants, in which rutin was detected only in 2 extracts from 10 in low concentrations. It's worth mentioning that there is an inverse relationship of the amino acids content and anticonvulsant activity of the studied herbal substances according to the integral indicators of efficacy – decrease in lethality rate and decreasing of the number of clonic-tonic attacks for 1 mouse. Besides anticonvulsant activity, herbs with the highest amount of neurogenic amino acids showed high neuroprotective properties against the background of traumatic brain injury experimental therapy.

Thus, the detailed analysis of the relationship between phytochemical composition and anticonvulsant activity of herbal extracts on the experimental seizures has shown that anti-seizure activity of the extracts most probably depend on rutin and neurogenic amino acids content. It's worth mentioning that herbs are not non-toxic just because they are natural. Some of the studied herbs appear to be rather safe in common use, but all medicines, herbal or otherwise, should be used with caution.