MYRTENAL AND VERBENONE INHIBIT ACETYLCHOLINESTERASE, A KNOWN ALZHEIMER TARGET

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Inhibition of acetylcholinesterase (AChE) is a common treatment for early stages of the most general form of dementia, Alzheimer’s Disease (AD). The therapy with AChE inhibitors (AChEi) is no longer considered to be only symptomatic, but also disease modifying and these medications are still the first choice for treating AD patients in early stages of the disease.

In our study 35 selected components of essential oils were tested for their potential in vitro anti-acetylcholinesterase activity based on Ellman’s colorimetric assay.

These essential oil components were chosen as characteristic samples of various functional groups (methylenes, alcohols, aldehydes etc.). Five of these samples showed a distinctive inhibition of AChE: 1,8-cineole, carvacrol, cinnamaldehyde, myrtenal and verbenone apparently inhibited AChE; the highest inhibitory activity was observed for myrtenal and carvacrol (IC50= 0.027 and 0.033 µg/ml).

This is the first study showing the AChE inhibitory activity of myrtenal and verbenone (IC50= 0.41 µg/ml).

All these monoterpenes exhibit an up to 100-fold stronger AChE inhibitory activity than the already known AChE-inhibitor galantamine (IC50= 4.33 µg/ml).

Based on these results it can be stated that some components of essential oils inhibit AChE and might therefore be used for the treatment of AD.