

Inhibition of enzymes important for Alzheimer's disease by antioxidant extracts prepared from 15 New Zealand medicinal trees and bushes

ABSTRACT

Alzheimer's disease is characterised by progressive mental deterioration, related to ageing and senility. Thirty methanol and ethyl acetate extracts from 15 native New Zealand trees and bushes were produced and tested for the inhibition of three enzymes related to neurotransmission: acetylcholinesterase (AChE), butyrylcholinesterase (BChE) and beta-secretase (BACE). In addition the IC₅₀ for the antioxidant potential of the extracts was determined. *Weinmannia racemosa* and *Kunzea ericoides* were effective inhibitors of AChE-BChE and beta-secretase, respectively. The IC₅₀ for *W. racemosa* extracts against AChE and BChE ranged between 8.09 µg/mL and 37.07 µg/mL. The ethyl acetate extract of *Schefflera digitata* was also an effective inhibitor of BChE (IC₅₀ = 25.38 µg/mL). *K. ericoides* IC₅₀ for beta-secretase were 29.05 µg/mL and 36.40 µg/mL. The highest radical scavenging activity (RSA) was detected in the methanol extract of *Aristolelia serrata* (IC₅₀ = 2.34 µg/mL), followed by both extracts of *Hebe stricta* and *W. racemosa*, and last the methanol extracts of *K. ericoides* and *Pomaderris kumeraho*, which presented higher RSA than the reference antioxidant (IC₅₀ <12.0 µg/mL). *W. racemosa* showed inhibitory activity against AChE and BChE enzymes and antioxidant activity, which suggests these extracts may have potential for application in patients suffering from Alzheimer's disease and other dementias.