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In vitro Determination of Carbonic Anhydrase Inhibition of the Flowers of Vanda Orchid, Vanda Tessellata Roxb. (1795) by Modified Colorimetric Maren T.H. (1960) Method

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Abstract : The orchid, Vanda tessellata was chosen by the researchers because of the presence of the constituents in the family Orchidaceae such as alkaloids, flavonoids and glycosides that might give an inhibition activity of the carbonic anhydrase enzyme. This study aimed to determine the in vitro inhibition of carbonic anhydrase of Vanda tessellata flower extract. With the use of modified colorimetric Maren T.H. (1960) method, the time in seconds each test solution changed its color after the rate of CO2 hydration were recorded. Two solvents were used: the semi-polar, 95% ethanol and the non-polar, dichloromethane solvents. The percent inhibition activity of carbonic anhydrase of the different concentrations of solvents ethanol (1%, 25% and 50%) and dichloromethane (1% and 10%) test solutions were determined. Results showed that the ethanol-based extract of Vanda tessellata in different concentrations showed an inhibitory effect while the dichloromethane-based extract of Vanda tessellata showed no inhibitory effect of carbonic anhydrase activity. For ethanol extract, the concentration with the highest activity was 50% followed by 25% which changed its color from red to yellow with an average time of 13.11 seconds and 11.57 seconds but 1% with an average time of 7.56 seconds did not exhibit an effect. The researchers recommend the isolation of the specific active constituents of Vanda tessellata that is responsible for the inhibitory effect of carbonic anhydrase enzyme. It is also recommended to utilize different blood types to observe different reactions to the inhibition of the carbonic anhydrase.

Keywords : carbonic anhydrase, inhibition, modified colorimetric Maren TH method, Vanda orchid
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