

ABSTRACT

The study on the role of adenosine receptors in the treatment of Parkinson's disease showed that their therapeutic effects might be associated with neuroprotective action. Indonesian plant *Fraxinus griffithii* Clarke (Tikken) contains Central Nervous System active substance. The aim of this study was to investigate whether the extracts, fractions and isolates of *Fraxinus griffithii* Clarke have adenosine receptor inhibitor effect and to know how does pharmacological activity of the extracts of *Fraxinus griffithii* Clarke by *in vivo* assay on animal motoric activity.

To obtain the materials test in the form of extracts, fractions and isolate, the separation processes were carried out by column chromatography. There were eleven fractions obtained by fractionation process (FG 1 - FG 11). The subsequent separation was carried out on the predominant fraction in terms of amounts, ie the fractions FG 6, FG 7, FG 10 and FG 4. Sub-fractionation process of FG 6B obtained white powder. This white powder was further analyzed using LC-MS and NMR spectrophotometer. The results indicated that the white powder was syringin.

Testing activity was conducted both in vitro and in vivo. The in vitro activity test was performed using adenosine receptors by radioligand binding assay method. Meanwhile the in vivo assay on animal motoric activity was conducted by rotarod.

The results of the study showed the in vitro activity correlated with the affinity (indicated by the value K_i). The lower the K_i value, the higher the affinity. In this experiment, the ethanol extract and syringin did not show any affinity to the receptor. The fraction that showed affinity was fraction FG 3, FG 7E, FG 7F, FG 7H, FG 9, FG 10, FG 10B, FG 10C and FG 11 (with A_1 adenosine receptor) and fraction FG 10 and FG 10C (with A_{2A} adenosine receptor). The fraction FG 10B ($K_i = 0.46 \pm 0.01$) exhibited the highest affinity to A_1 adenosine receptor, the fraction FG 10C ($K_i = 12.10 \pm 1.40$) to A_{2A} adenosine receptor and so did the fraction FG 11 ($K_i = 0.57 \pm 0.11$) to A_3 adenosine receptor.

The conclusion of this study is the fractions of *Fraxinus griffithii* Clarke containing active substance had adenosine receptor inhibitor effect. Also, the extract of *Fraxinus griffithii* Clarke showed behavioral changes in animals by the progression of time.

Keywords : *Fraxinus griffithii* Clarke, adenosine receptor, radioligand binding assay, Parkinson