UNIVERSITI TEKNOLOGI MARA

POTENTIAL ANTIEPILEPTIC DRUG FROM KK28R1 ENDOPHYTIC EXTRACT

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ABSTRACT

Epilepsy is a chronic neurological disorder that can affect all ages of people around the world. Most patients cannot tolerate antiepileptic drugs (AEDs) due to the side effects and toxicities. In this study, KK28R1 endophytic extract from the local source was used to observe its potential as an AED using a picrotoxin-induced convulsion model in mice. This study determined the median lethal dose (LD_{50}) of KK28R1 in mice. In the LD_{50} procedure, six doses of KK28R1 crude extract (20mg/kg, 10mg/kg, 1mg/kg, 0.1mg/kg, 0.01mg/kg, and 0.001mg/kg) was intraperitoneally (i.p) injected into six different groups (five mice in each group) with one control group. Arithmetic Method of Karbar was used to determine the LD_{50}. From the LD_{50} result, three acute doses of KK28R1 endophytic extract (20mg/kg, 10mg/kg and 5mg/kg) were intraperitoneally injected into the mice (five mice in each group) 10 minutes prior to the administration of 10mg/kg of picrotoxin to induce seizure. A positive control group of 25 mg/kg of phenobarbital (i.p.) and a negative control group 10mg/kg normal saline (i.p.) was prepared. From the acute dose, 10mg/kg of sub-chronic dose of KK28R1 was administered into the mice (five mice in a group) for 14 days. On the 14^{th} day, 10 minutes after the administration of the extract, 10mg/kg of picrotoxin was intraperitoneally injected into the mice. The results showed that the KK28R1 endophytic extract has a potential use as an antiepileptic drug. KK28R1 endophytic extract has shown effects by delaying the onset of convulsion, peak of convulsion and the time of death. Hence, the study may lead to the discovery of a new antiepileptic drug from endophytic extract which is natural and from the local source.

Keywords: KK28R1 endophytic extract, median lethal dose (LD_{50}), intraperitoneal injection, picrotoxin, antiepileptic drugs (AEDs), epilepsy.

CHAPTER 1

INTRODUCTION

Epilepsy is a chronic disorder of the brain function characterized by periodic and unpredictable recurrent seizures with or without convulsions. Seizures are caused by sudden, usually brief and excessive electrical discharge of a group of brain neurons characterized by alteration of behavior (change in what the person feels, senses, thinks or behaves). The patient may experience temporary loss of consciousness, a change in perception or patients may go into a dream-like state, and strange repetitive motions like blinking or twitching. Epilepsy may result from hereditary tendency, infection of the brain, brain injury, and complication of other diseases or socioeconomic problem. In most cases the cause is unknown. Epilepsy can be diagnosed by an electroencephalogram (EEG), and a computerized axial tomography (CAT) or magnetic resonance imaging (MRI) scan.

Epilepsy is a disorder that affects people of all ages. Epilepsy affects about 50 million peoples worldwide. Approximately 70% of them respond to epilepsy treatment. Most of the patients are from developing countries and about three fourths of them do not get appropriate treatment. In many countries, people with epilepsy and their families may suffer from discrimination (World Health Organization, 2009).