



Betulin from bark of *Betulautilis* act as an anti-convulsant agent

Vikas Singh^{*1}, Gyanendra Saxena², Himanshu Joshi², Priyanka Gupta³, Ekta Arya²

¹Northern India Engineering College, Faculty of Pharmacy, BBD University, Lucknow, India

²Faculty of Pharmacy, Naraina Group of Institutions, Panki, Kanpur, India

³Indian Veterinary Research Institute, Bareilly, India

ABSTRACT

The present study was undertaken to explore the anticonvulsant activity of the 95% ethanolic extract of the bark of *Betulautilis* on male albino mice's divided into three test groups which were given the graded doses of the dichloromethane fraction of ethanol extract 100, 200 & 300 mg/kg bodyweight respectively and 20 mg/kg body weight phenytoin solution as standard). The method used to induce the convulsion in mice's was Maximal Electro-Shock (MES)-induced convulsions and the entire activity was recorded and analyzed properly to observe characteristic phases, i.e. Flexion, Extensor, Clonus, Stupor and Recovery / Death. Preliminary phytochemical screening revealed the presence of alkaloids, glycosides, carbohydrates, saponins, triterpenoids & flavonoids. It was seen that the extract of bark of *Betulautilis* in a dose of 300 mg/kg body weight was found to possess maximum inhibition of seizure (88.93%) in comparison to all other doses and all other treatments given except standard drug (Phenytoin), showing 93.33% inhibition of seizure. So, It is concluded that plant (*Betulautilis*) seem to be promising candidates with respect to its anticonvulsant activity and may be used for controlling epileptic seizures.

Keywords: Betulin; convulsion; maximal Electro-Shock; seizure

INTRODUCTION

Epilepsy is a second most common neurological disorder after stroke, with a global-level incidence of one in every 200 people. One in every 100 persons in India suffers from epilepsy. The brain is a highly complex structure composed of millions of nerve cells (neurons). The neurons are responsible for a range of functions, including consciousness and body functions and postures (Anonymous, 1988). A sudden temporary interruption in some or all of these functions is called a "seizure". This transient alteration of behavior can be caused because of some disturbances in the brain or due to the disordered, synchronous, and rhythmic firing of populations of brain neurons or, rarely, because of external factors such as a temporary stoppage in the supply of oxygen or glucose to the brain. The term epilepsy refers to a disorder of brain function characterized by the periodic and unpredictable occurrence of seizures. There are numerous types of epileptic seizures. They are classified on the basis of age of onset, duration, degree of loss of consciousness, pattern of seizure and brain focus. Some children have generalized convulsions when there is a sudden rise in body temperature. This is called febrile convulsion, and is a nonepileptic seizure. Seizures can be "nonepileptic"

when evoked in a normal brain by treatments such as electroshock or chemical convulsants or "epileptic" when occurring without evident provocation (Rastogi and Mehrotra, 2004). Epileptic seizures have been classified into partial seizures, those beginning focally in a cortical site, and generalized seizures, those that involve both hemispheres widely from the outset (Hardman and Limbird, 2006).

MATERIALS AND METHODS

Animals and experimental protocol

Male albino mice (weighing 25-35 gm each) were used for the study. The test was started 30 min. after the intraperitoneal administration of vehicle / test / Standard compound. An apparatus with corneal electrodes was used to deliver the stimuli. The stimulus intensity applied was 48 mA, 50 Hz for 0.2 seconds, depending upon the apparatus used and the capability of stimuli to produce convulsions in individual animals. A stimulus of this intensity was capable enough to show characteristic extensor tonus. The animals were observed closely for 2 to 2.5 min. and disappearance of hind leg extensor tonic convulsion was used as positive criterion. Entire activity has been recorded and analyzed properly to observe characteristic phases, i.e. Flexion, Extensor, Clonus, Stupor and Recovery / Death (especially extensor tonus, as all anticonvulsant drugs showing activity must shorten or abolish this phase of convulsion). Finally, the percent inhibition of seizures relative to control was calculated for various doses using standard formula.

* Corresponding Author

Email: vikas.singh48@gmail.com

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