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Electroconvulsiometer For Pharmaceutical Industry

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Abstract- To study the effects of anti-convulsant *and a*ntiepileptic drugs the Electroconvulsiometer has been designed.For the pharmacological laboratories of Medical Colleges, Research Institute and Pharmaceutical concern in the field of research, screening or manufacturing of the drugs it is one of the best standard and fundamental instrument . Through an inbuilt electronic timing device it delivers an Alternating Current Stimulus of 50 Hz (Cycles per second). This timing circuit allows the stimulus to pass the current for a preset period, which may be varied from 0.1second to 0.2 second. For producing minimal and supramaximal seizures required in the assay of anticonvulsant / antiepileptic drugs the intensity of stimulus variable from 40 to 150 mA is suitable for producing minimal and supramaximal seizures required in the assay of anticonvulsant / antiepileptic drugs. The accessory required with the instrument is two set of crocodile clips. Different doses of different extracts were assessed by maximal electro shock (MES) and Pentylene Tetrazole (PTZ) induced convulsions for it's anticonvulsant activity in a dose dependent manner. We design the digital Electroconvulsiometer.

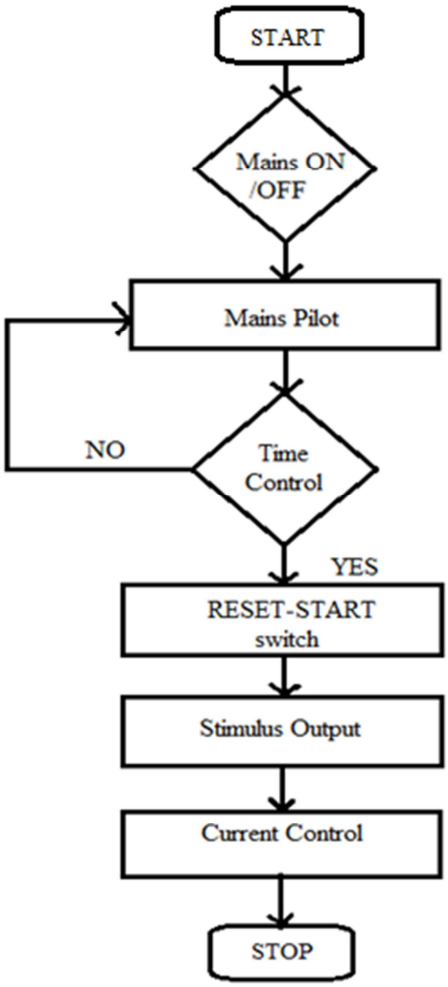
Index Terms- Phenytoin, Maximal Electroshock, supramaximal seizures

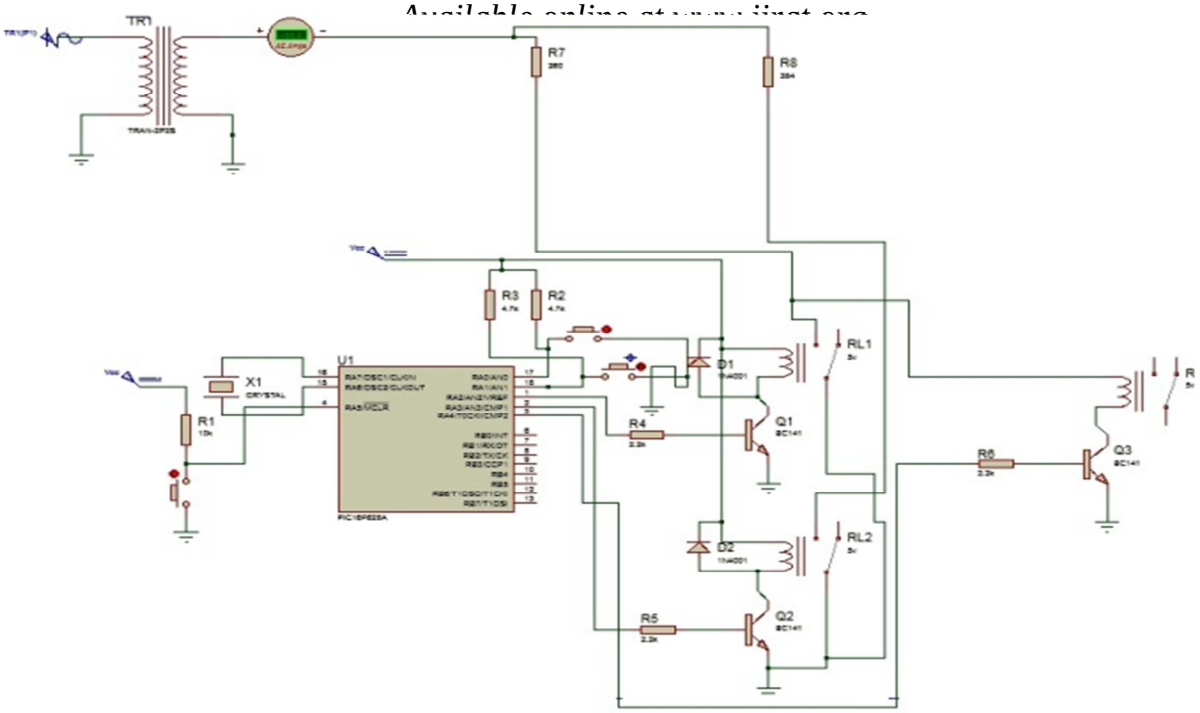
1. INTRODUCTION

This laboratory apparatus is based on the experimental technique originally described by Rat. It is one of the standard and fundamental instrument for the Pharmacological Laboratories of medical colleges, research institute and Pharmaceutical concern in the field of research , screening or manufacturing of the drugs [4]. We can design the Digital Electroconvulsiometer. If we want to provide the current to the Rat/Mice without any infection to the eyes then corneal electrodes are used and if we want to provide current to the Rat/Mice through the ear then crocodile clips are used [2]. Here we used crocodile clips. The high quality acrylic sheet is used to exterior of the enclosure. For applying maximal electroshock through crocodile clips the Electroconvulsiometer is used. To study the anti-convulsant activity of phenytoin against maximal electroshock induced convulsions in rat or mice instruments is used.

Alternating current of 50 Hz cycles per second is provided by the instrument. The apparatus contains electronic timing arrangement which automatically passes stimulus current for a present period. This inbuilt solid state timing circuit allows the stimulus to pass the subject for a preset period, which may be valid from 0.1 to 0.2 second. The intensity of stimulus, variable from 40 mA to 150 mA [1]. Is suitable for producing minimal and supramaximal seizures required in the assay of anticonvulsant / antiepileptic drugs .

2. FLOWCHART





3.1. Circuit Diagram of Electroconvulsiometer

3. WORKING

In this circuit we use the microcontroller IC i.e. PIC16F628A IC. It is 18pin IC in this circuit of Electroconvulsiometer PA0 pin is use as a output i.e from this pin we got a 40mA current at the output. PA1 pin is use as output pin from this pin we got a 150mA current at the output terminal. PA2 pin connected to the resistor to get a 40mA current at the output accurately because we use the AC to AC converter and at the output of converter we get a voltage 110V and near by 500mA current so to drop the 460mA current we use the 260ohm 50W resistor. Similarly, we use the 354ohm 50W resistor at PA3 to drop a 350mA current therefore at the output we get the 150mA current. At the PA4 we connect the relay. In this circuit we use the pull up resistor, Pull up resistor is use to make switch initially high. Frequency of the crystal is 8MHz.To drive the the relay there is 30 to 40 mA current,this current can not be observe therefore BC141 transistor is used.

4. MEHODOLOGY

1. Mains ON – OFF Switch - situated on right hand of bottom row[4]. (230V)
2. Mains Pilot -glows on when ON - OFF Switch is turned on, situated on right hand side [4]. (230V)
3.Time Control – The duration of stimulus is manually controlled by operator and any duration longer than 0.2 sec can be derived [3] (5V).
4. Reset-Start Switch– It is a push button switch. When the control switch is set at any position marked to 1.0 and this switch pressed once a stimulus will be delivered automatically
row [4].
6. Stimulus Pilot – At the top left on the panel it glows during the time a stimulus is delivered [4].
7. Current Control - The upper three dials are to set the intensity of the stimulus to be delivered. The left hand switch is current control - the stimulus current is set by this switch from 40 to 150 mA [4].
8. A protective fuse along with Mains socket are placed on the back cover plate of the instrument.

5. CONCLUSION

The study concludes that nebivolol possesses anticonvulsant action alone and in combination with sub therapeutic doses of phenytoin and phenobarbitone when evaluated by the maximal electroshock seizures method in mice. More research is ascertain the mechanism of action of nebivolol and to detect the effects of nebivolol on the cognitive and motor functions. Further studies are required to establish the exact basis for anticonvulsant activity of nebivolol, and to extrapolate animal data to human situations.

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