e-ISSN 2320 –7876 www.ijfans.org
Vol.11,S Iss.2, 2022
 UGC CARE Listed (Group -I) Journal

Development Of Membrane Selective Electrodes For Determination Of The Dipirone And Piribedil Compounds

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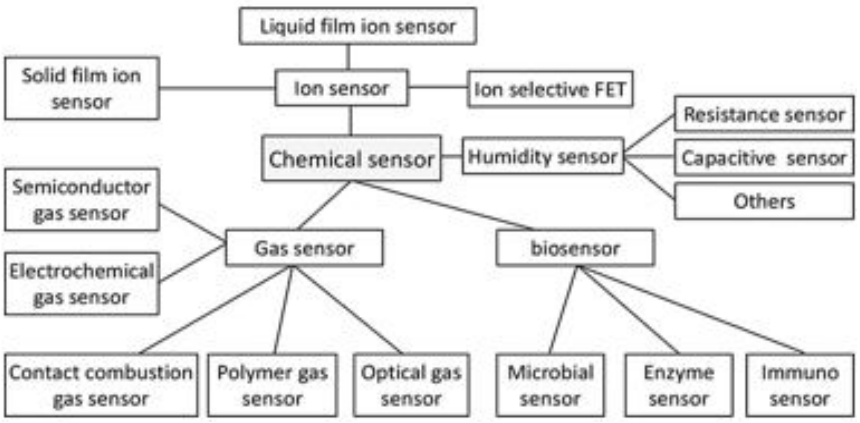
Abstract:-

The performance of two PVC membrane electrodes containing DOP & DBP are described two electrodes are based on the use of DOP & DBP association compounds Diprone (Sodium salt of 1-phenyl 1-2,3-Dimethyl 1-4-Methylaminomethane sulphonate – 5-pyrazolane) and Piribedil is 1-(3,4 Methylenediorcybenzyl) – 4,2 –pyrimidyl) piperazine(P D)with TPB & PT.
The developed electrodes were also analysis is some pharmaceutical formulations. The electrodes are characterized by a wide usable concentrations range of $1.01x10^{-5}$ – 1 x 10^{-2} M, Respectively for nearly all the studied electrodes at 25 ^{o}C by the use of ion exchangers membrane method. That can be use for the direct and measurement of Ions and other species. The use of ion – selective electrodes and potentiometric techniques in the analysis of drugs. Substances are reviewed. Ion–exchangers membrane technologies used for the characterization of these membranes are their applications were also reviewed for the benefit of readers. So that they can get all Information about the Ion- exchanger membranes at one platform.

INTRODUCTION

A chemical sensor is a device that selectively, continuously and reversibly transforms chemical information, ranging from the concentration of a specific sample component to a total composition, into a single of a form that can be processed by an instrument **(such as voltage, current or frequency)**. Ion-selective electrodes (ises) belong to the most widely applied chemical sensors. A chemical sensor is a device that measures and detects chemical qualities in an analyte. They have two function namely selection and transduction. The formar assures the required selectivity behavior of the ion selective part of the sencer through chemical interation with charge species of the analyte and the latter the transhformation of these interecation into an electrochemical potential of the measureing (ise) relative to a referrnce electrode since the signal is proportional to the logarithm of the ion most fruitful exciting and inrtedisciplinary aress of research in analytical chemistry here in present study, two new diprone and piribedil compound using ion selective electrodes have been analyzed.



METHOD & MATERIAL

There are two compounds have been Analyzed

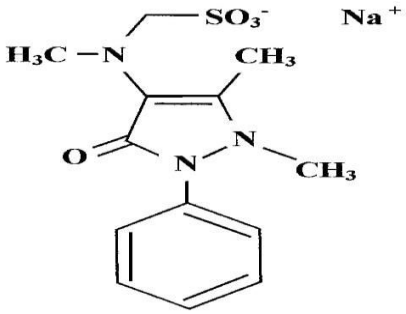
1. Diprone(DP)

Diprone (Sodium salt of 1-phenyl 1-2, 3-Dimethyl 1-4-Methylaminomethane sulphonate–5-pyrazolane) (DP) And Piribedil is 1-(3, 4 Methylenediorcybenzyl) – 4,2 –pyrimidyl) piperazine (PD) Introduction Diprone is an analgesic/Antipyretic drug that has been in use since 1922.

Diprone has been tried in the treatment of allergic rash , Low Blood pressure , Leucopenia , Severe Skin reaction Circulatory shock , Neutropenia , Thrombocytopenia , Renal Failure , Protein urea its Adverse effects .

Diprone is a painkiller, Spasm reliever and Fever reliever that also has anti-inflammatory effects. It is most commonly given by mouth or by intravenous infusion.

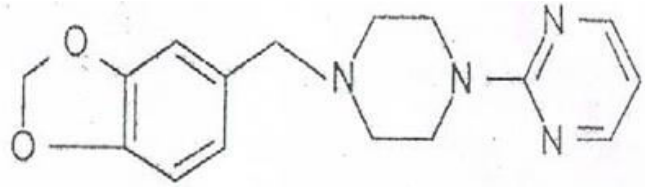
Diprone is marketed in Brazil as such or as the magnesium salt as well as in Association with other drugs through 51 and 75 registered trade names, respectively.



Diprone (DP)

2. Piribedil (Pd)

Piribedil is 1-(3, 4-methylenedioxybenzy1)-4-2-pyrimidy1) piperazine (PD) has been shown to be active as a peripheral vasodilator. Piribedil is a Adjunctive treatment of intermittent claudicatation due to peripheral vascular diseases (PVD) of the Lower Limbs. Piribedil is a non-ergot dopamine agonist that has been given by mouth in the treatment of parkinsonism and in circulatory disorders. Piribedil is a dopamine Dragonist while its metabolite is reported to act on D1 receptors. It has been mainly used as an adjunct to levodopa therapy and appears to act more on termor than on other symptoms of Parkinson's disease, althought it was noted that most of the evidence for this came from uncontrolled studies. Piribedil has been tried in the treatment of depression, its adverse effects reported include nausea and vomiting, dizziness, confusion, drawsiness, hypothermia, dyskinesias and occasional change in liver function. The proprietary preparation is Trivastal tablets**.**



Piribedil (PD)

Experimental:-

The conventional sensitive electrodes were prepared as described previously. Trials make to attain the optimum membrane composition, result in selecting membranes contained the optimum

percentages (in wt %) ion-pairs or ion- associates, PVC and DOP or DBP. The membrane components (totaling 350 mg) were dissolved in THF (10.00) and poured into a 7.5 cm Petridish. Overnight evaporation of the solvent yielded a membrane 0.1 mm thickness, as visually determined by an optical microscope. For each electrode, a disk with 14 mm diameter was punched from the membrane and glued to the polished end of a 2 cm plastic cap attached to one end of a 10 cm glass tube. The electrodes were than filled with 0.1 M Nacl + 10^{-3} M drug solution and Ag/AgCl wire was immersed in this solution. The resulting electrodes were preconditioned by soaking them for appropriate time in 10^{-3} M drug solution.

RESULT AND DISCUSSION:-

The Four electrodes have been prepared and investigated in the present study. The electrodes were based on the incorporation of the ion-exchangers in PVC matrix using DOP or DBP as a platicizer. The optimum composition of membrane were : (5.0% DP-TPB, 47.5% DOP and 47.5% PVC) and (10.0 % DP - PT, 45.0 % DBP and 45.0 % PVC), (5.0% PD -TBP, 47.5% DBP and 47.5% PVC) ,(5.0 % PD - PT, 47.5.0DOP and 47.5 % PVC), respectively with slopes ^ 56.5, 57.8, 60.2 and 59.1, mV per concentration decade for DP - TPB, DP - PT, PD – TPB, PD – PT respectively. These compositions have been used to carry out all the subsequent studies.

The electrodes are characterised by a wide usuable concentration range of 1.01 x 10^{-5}-1.0 x10^{-2} M, respectively for nearly all the studied electrodes at 25°C.

A method for regeneration of the exhausted electrodes was applied successfully in case of all electrodes.

The change of P^H does not affect the potential readings of the studied electrodes within the P^H ranges, 3.9-9.0,3.5-10.0, 4.0 - 11.0 and 3.3 – 9.6 for DP -TPB, DP - PT, PD - TPB, PD - PT, electrodes, respectively.

The study of the effect of temperature change on the potential response of the electrodes showed that they are thermally stable over a wide range of temperature (20-60°C). The thermal coefficient of the electrodes are 0.00052, 0.00113, 0.00101 and 0.00126V/°C for DP-TPB, DP - PT, PD - TPB, PD -PT, respectively. This reveals that the electrodes have high thermal stability within the usable temperature range.

The investigated drugs were also determined in aqueous solution, using potentiometric titrations, conductimetric titrations and by applying the standard additions method. The study showed that the electrodes under investigation are highly selective even in the presence of some in organic cations, sugars, amino acids and component of the drug formation.

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