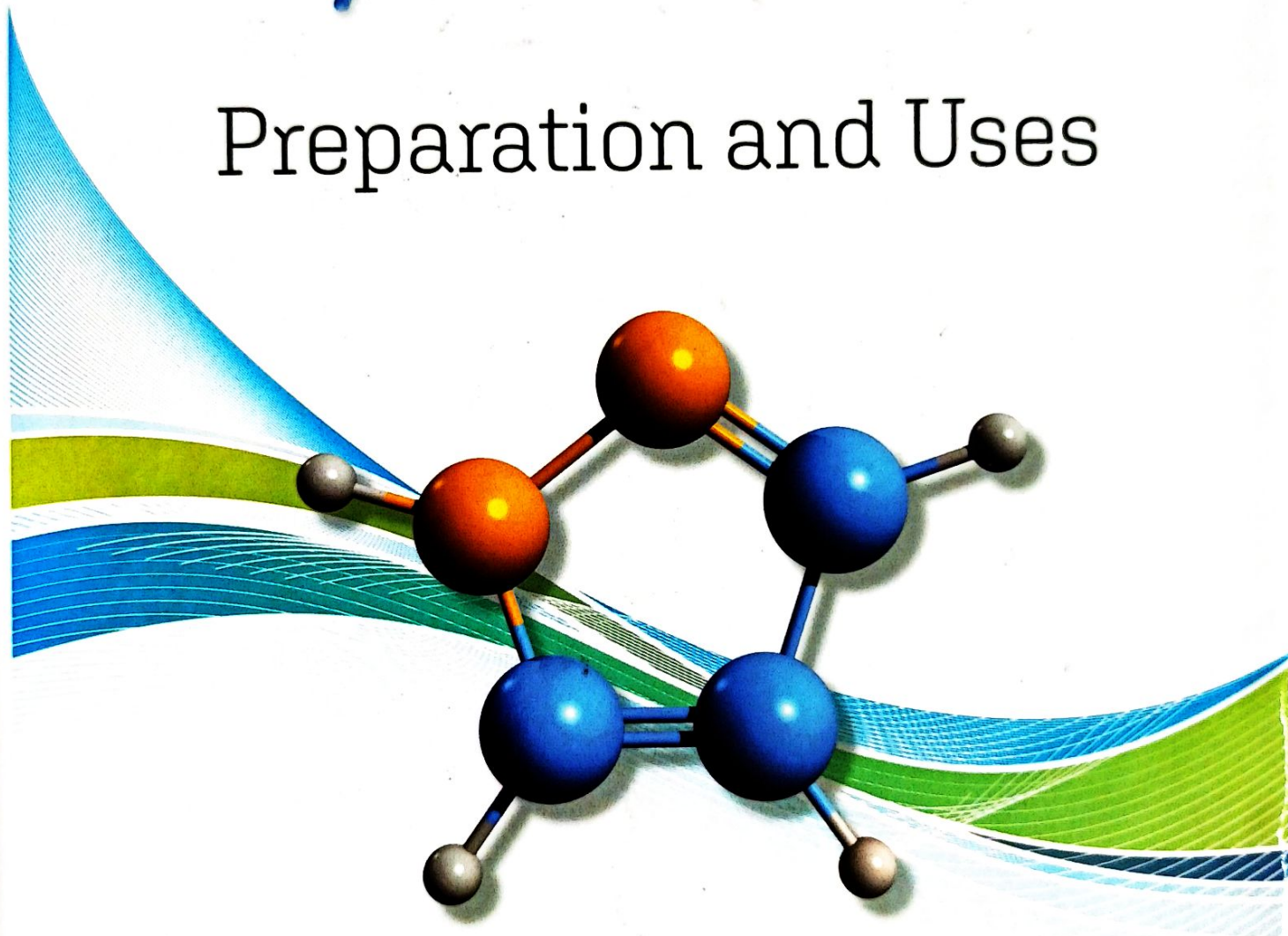


CHEMISTRY RESEARCH AND APPLICATIONS

Pyrazole

Preparation and Uses



Dilipkumar Pal

Editor

NOVA

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Chapter 20

PYRAZOLE AND ITS DERIVATIVES AS ANTI-DIABETIC AGENTS

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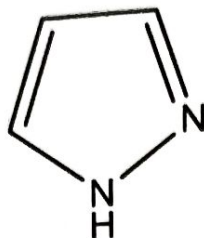
ABSTRACT

It has been already reported that compounds having pyrazole ring or moiety plays a key role to show various biological activities such as anticancer, anticonvulsant, anti-microbial, anti-diabetic, etc. As for instance, compounds having pyrazole moiety such as 4-(4-ethyl benzyl)-5-trifluoromethyl-1H-pyrazol-3-ol show SLGT (sodium-dependent glucose co-transporters) inhibitory action. Others are ethyl-2-para nitrophenyl-2,3-dihydro-1H-pyrazol-3-one-4-carboxylate and ethyl-2-meta nitrophenyl-2,3-dihydro-1H-pyrazol-3-one-4-carboxylate which act as hypoglycemic agent and play a very essential role in the treatment of diabetes. The main purpose of this chapter is to show the compounds having pyrazole moieties as potent anti-diabetic agent(s) by collecting various literature works that have been published by the different researchers around the globe.

Keywords: pyrazole, anti-diabetic agent, SLGT inhibitors, hypoglycemic agent

INTRODUCTION

Pyrazole comes under the class of organic compounds having heterocyclic nature characterized by a ring structure in which three carbon atoms along with the two nitrogen atoms at the position of the adjacent are present [1].

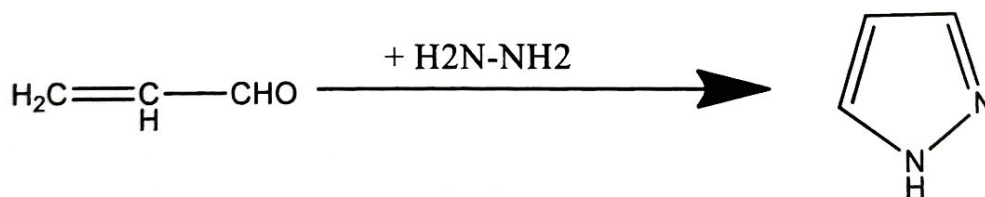


Pyrazole

The general molecular formula which is used for pyrazole is $C_3H_4N_2$. It is a weak base with pK_b value 11.5 and pK_a value is 14.21 which are almost equal to the value of imidazole. Pyrazole is classified as alkaloid but found rare in nature [2].

PREPARATION

These are synthesized by the reaction between α , β -unsaturated aldehydes and hydrazine followed up by dehydrogenation [3].



DIABETES

Diabetes is a well-known disease that occurs when the blood glucose level is above normal. As we know that in our body system blood glucose is the main source of energy which we get from our food. [4]. Insulin is one of the most important hormones which plays a vital role in the transportation of glucose into the cells which is further used as energy [5]. When our body doesn't produce insulin, secrete less insulin or not able to utilize insulin due to certain reason(s), it leads to high blood glucose level and become a reason to cause diabetes [6]. According to WHO, an estimate predicts that there are 110