

A Literature Review on Antipyrinein Chemistry Fields

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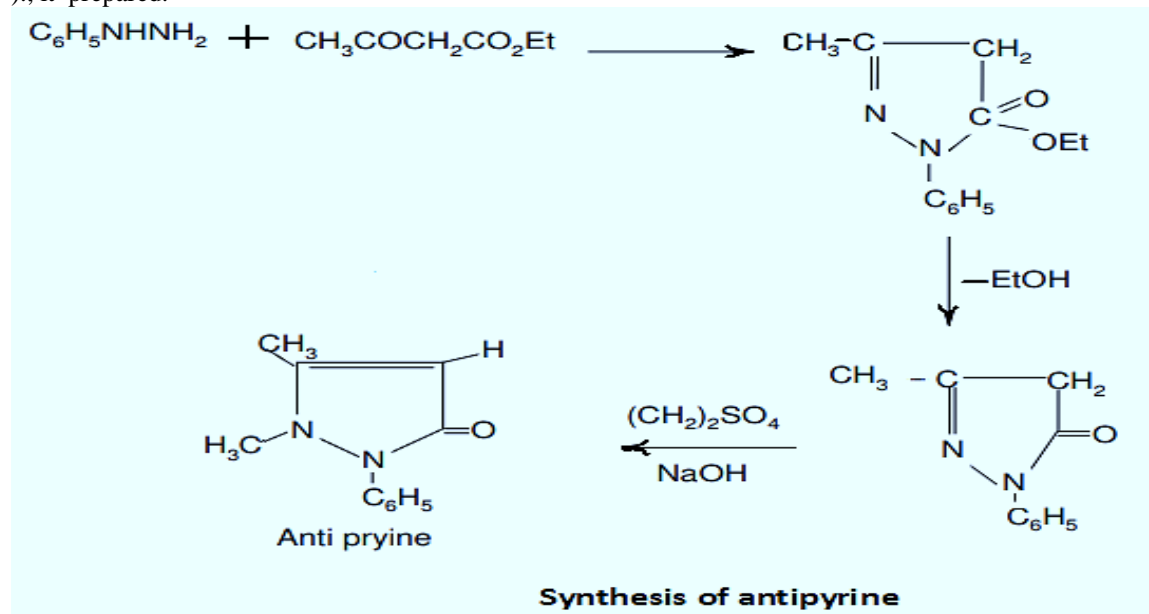
Abstract

This literature review concerned with antipyrine compound . Antipyrine compound is very important compound in many chemistry fields such as in coordination chemistry , analytical chemistry as a reagent which continuously identified for possible uses and applications in several fields beside to pharmacological , medical and industrial fields.

Keywords : field , antipyrine , pyrazolone , azo , Schiff , ligand , complex .

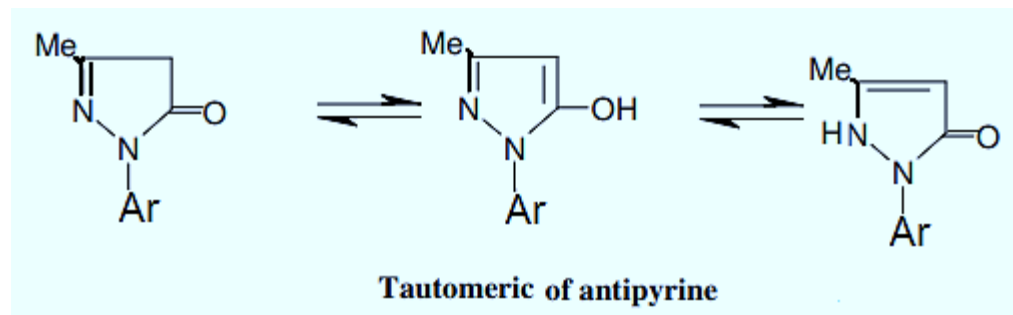
Introduction

Pyrazolone is a five – membered lactam ring compound involving two (N)- atoms with ketone group in the same ring . ,Antipyrine ring is odourless compound , a white powder or colorless crystal , very soluble in distilled water , alcohol (ethanol) or chloroform solvent , while it is less soluble in ether solvent with its aqueous solution. However, antipyrine is basic in its nature, which is due to involving (N)-atom at position(2) . Its melting point of (110-1130C). But it decomposes when distilled at(atmospheric pressures) while it has a boiling point of(141-1410C) under high vacuum and (3190C) at (174 mm). It has molecular weight is (188.23 g / mole)., it prepared:



Five- Lactam structure (pyrazolone) is an active nucleus in pharmaceutical activity. It is an active moiety as a pharmaceutical agents used in the treatment of arthritis and other musculoskeletal and joint disorders⁽¹⁶⁻²¹⁾. Sometimes the term((pyrazolone)) refers to nonsteroidalanti-inflammatory agents , it is a class nonsteroidalanti-inflammatory drug includes phenylbutazone, oxyphenbutazone, dipyron, and ramifenazone. Antipyrine (also named phenazone) which is a pyrazolone class analgesic agent in solutions in combination with other analgesic⁽²²⁻³⁰⁾ like benzocaine, and phenylphrine .

The Tautomeric of antipyrine :

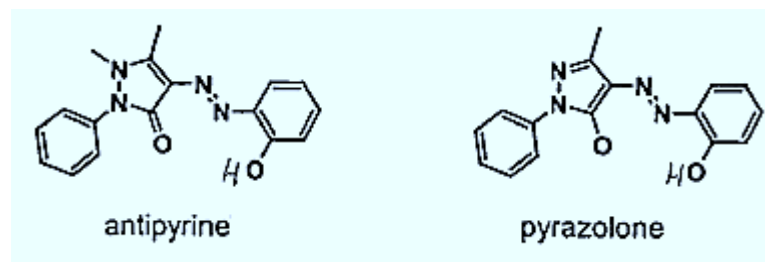


The antipyrine ring has been opened by (basic solution) - alcoholic potassium hydroxide at (1300) to form N-methyl-N1 -phenylhydrazine. Antipyrine ring is stable to (30%) hydrochloric acid at(1800) , but above (2000) it gives amino benzene (aniline), methylamine and ammonia(NH₃) .

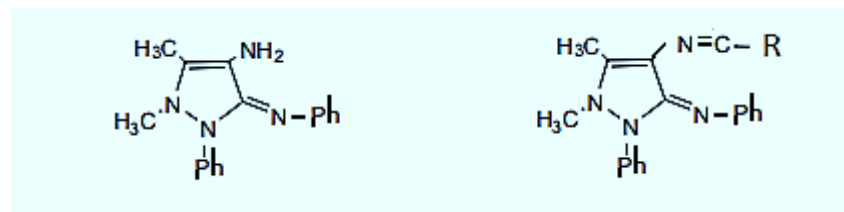
Pyrazolone derivatives are also act a starting material in synthesis of dyes and pigments.

2, 3-Dimethyl -1-phenyl -5-pyrazolone (antipyrine) has been discovered as antipyretics of the quinoline type . By this discovery, initiated the beginning of the German drug production and industry. It is now used as relief of many forms⁽³¹⁻⁴⁰⁾ of arthritis in which capacity it has more than an analgesic action in that it also decreases swelling and spasm through an anti – inflammatory action.

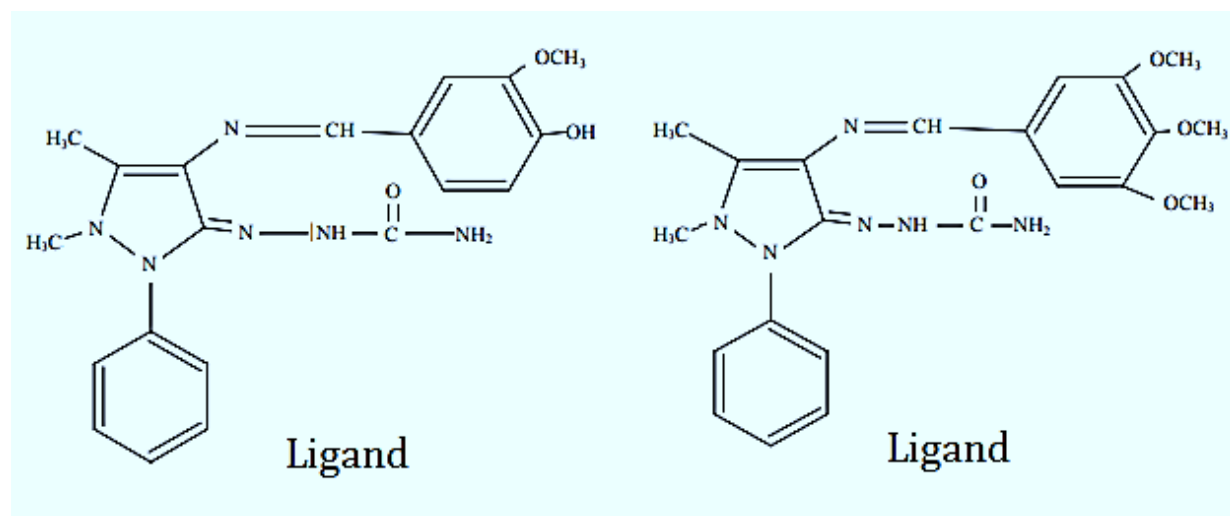
The pyrazolonewith its derivatives appear distinct medical activities like antituberculosis, anti-inflammatory, analgesic, antibacterial and antifungal activity⁽⁴⁰⁻⁴⁵⁾. Also coordination compounds containing antipyrine derivatives can be synthesized and studied recently for their various applications^(46- 48) with azo and imine groups⁽⁴⁹⁻⁵⁸⁾ :



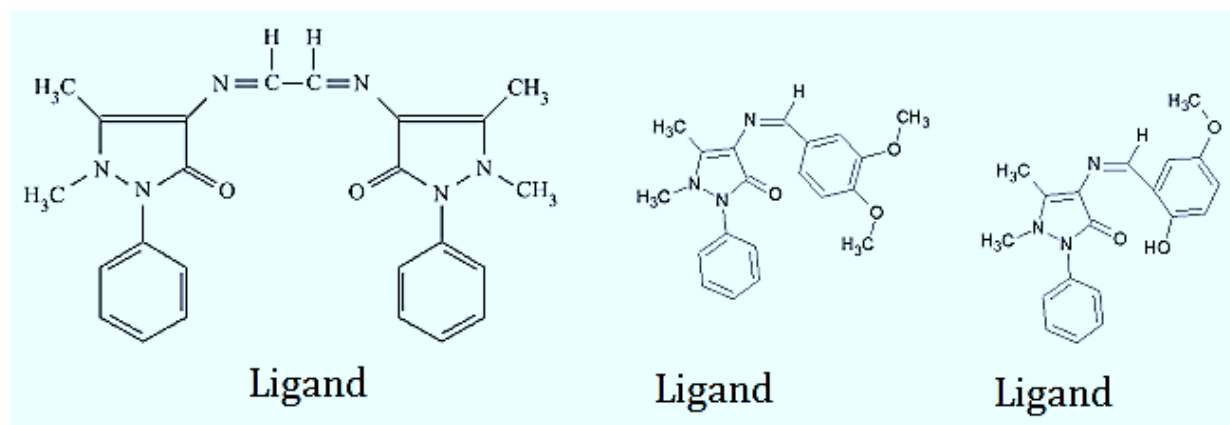
The reaction of pyrazolone derivatives⁽⁵⁹⁻⁶⁵⁾ with carbonyl compounds has not been reported largely. Hence, it was thought that pyrazolone compounds may provide good medicinal active compounds. Which is due to their easy modification and flexible nature, antipyrine-Imine ligands prepared in several compounds :



Antipyrine compounds with their complexes have interesting pharmacological and medical properties⁽⁶⁶⁻⁷⁰⁾. A search via the literatures reveals few reports on thermal studies on antipyrine – Anil metal complexes. The publications on the thermolytic identifications of antipyrine– Imine bases⁽⁷¹⁾ with first row transition metals summarized that the counter ions take a major role on the thermal stability of structure in complexes.

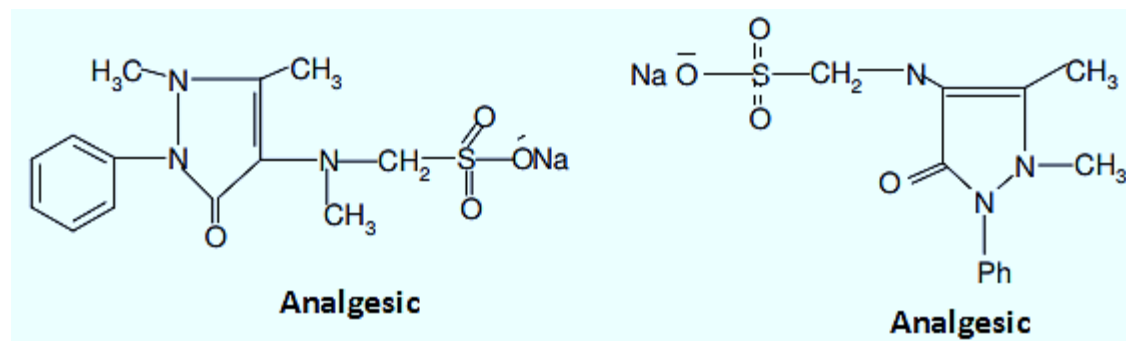


Cyclic phenazone with their derivatives (4-amino antipyrine) are known to concenter as (bidentate , tridentate)-ligands through coordinated to any metal ion from transition elements.

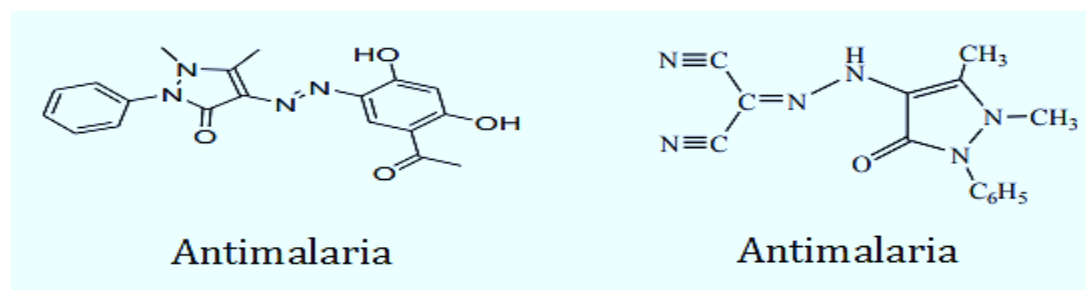


Imine base of 4-amino antipyrine and its complexes have variety of application and uses in the areas of catalysis clinical uses and pharmacologically⁽⁷¹⁻⁷³⁾.

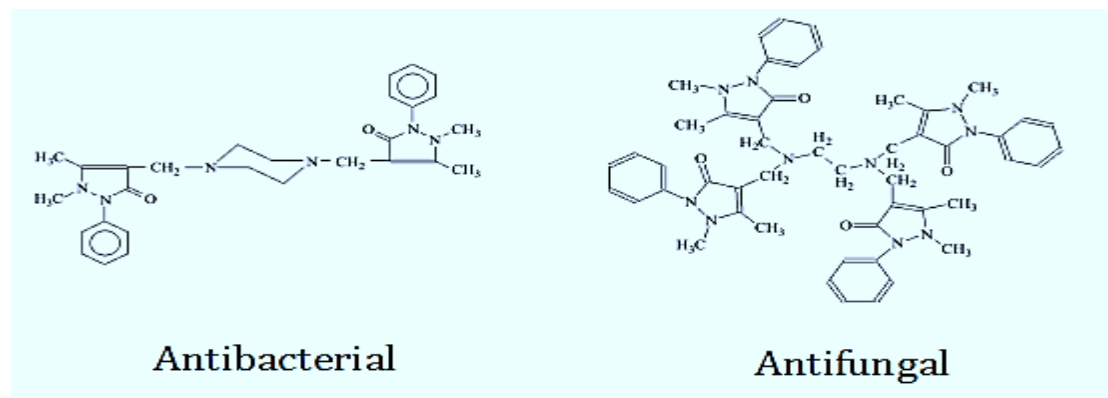
Antipyrine belongs to the five membered heterocyclic system. Some of the synthetic compounds involving pyrazole moiety have been focused in the medical chemistry field. The pyrazole derivatives, 4-aminoantipyrine has played an important role in coordination Chemistry; It gives stable complexes with types of transition metal ions and its complexes have many applications in analytical fields as reagents, biological fields⁽⁷⁴⁻⁷⁶⁾ as antimicrobial and clinical areas as analgesic:



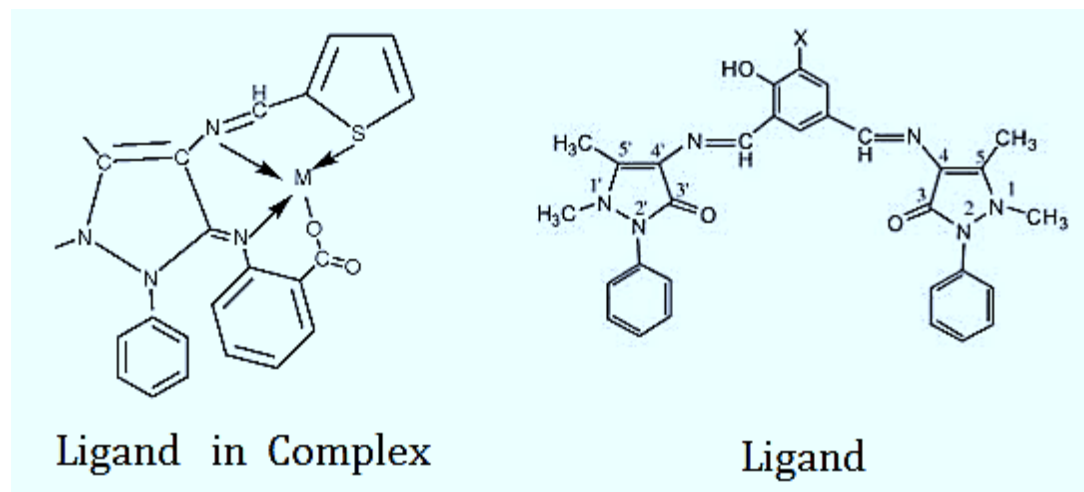
Pyrazolone compounds are used as antiinflammatory and chemotherapeutic agents and it is also active against a wide spectrum of microorganisms on bacteria and fungi (*E.coli*, *Pseudomonas Staphylococcus aureus*)m (*Candida albicans* - fungus) and malaria.



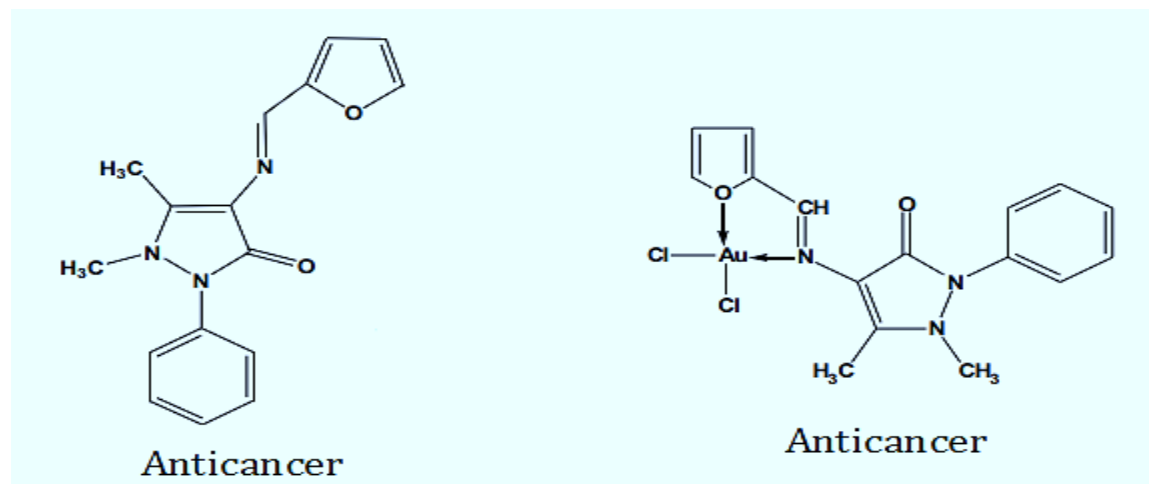
Also the chemistry of pyrazolone with its derivatives has been extensively characterized due to its physiological properties. The studying of the ion complexes of pyrazolone in antineoplastic medication, molecular biology and bio engineering has become hotspots in recent years.



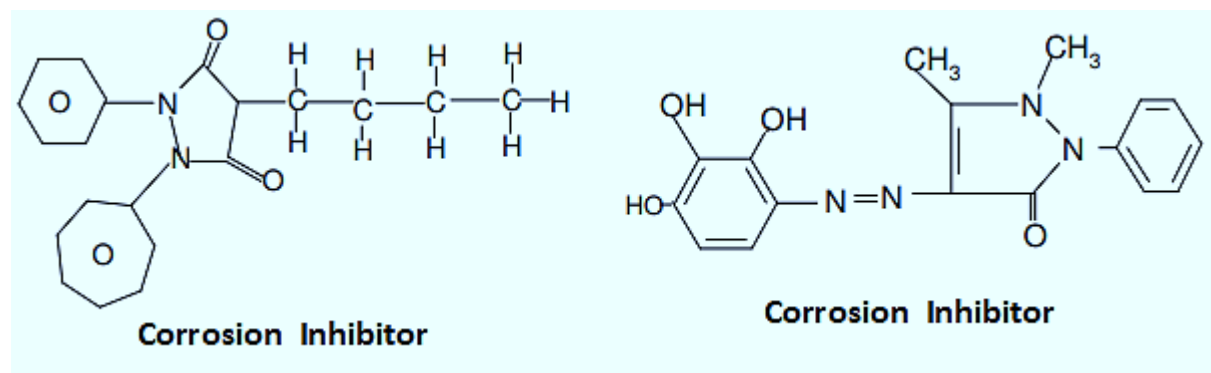
Antipyrine(pyrazolone) is a lactam derivative, it has appeared wide applications of biological and microbial activities such as antibacterial activity ,analgesic ,antiviral , and also used as precursors in the synthesis of bioactive compounds from (ligands , complexes):



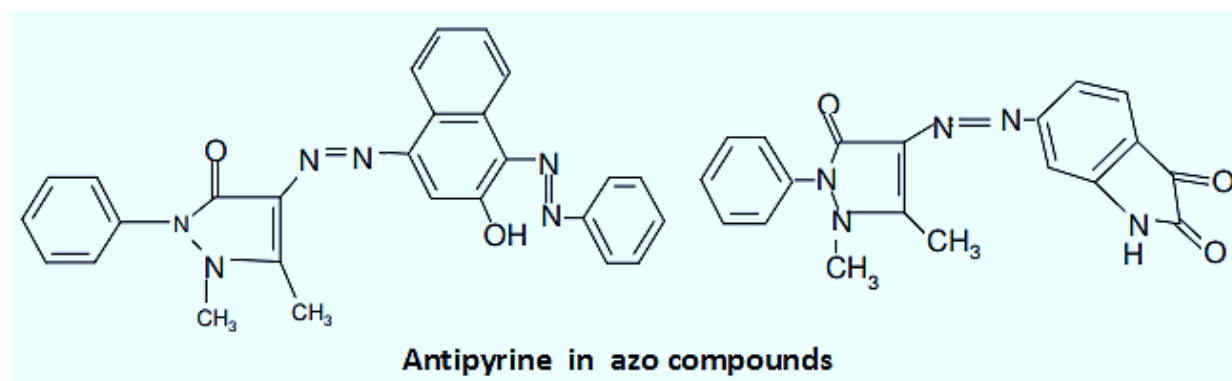
Due to this fact that pyrazolone derivatives are stable, useful intermediates, for the preparation of other organic compounds and substances containing biological activities, interest in studying antipyrine derivatives has been continued through many articles. Antipyrinenucleus⁽⁷⁴⁻⁷⁸⁾ like : antitumor ,antimicrobial(fungi , bacteria) , antiviral , anticancer , analgesic drugs and optoelectronic material aspects .



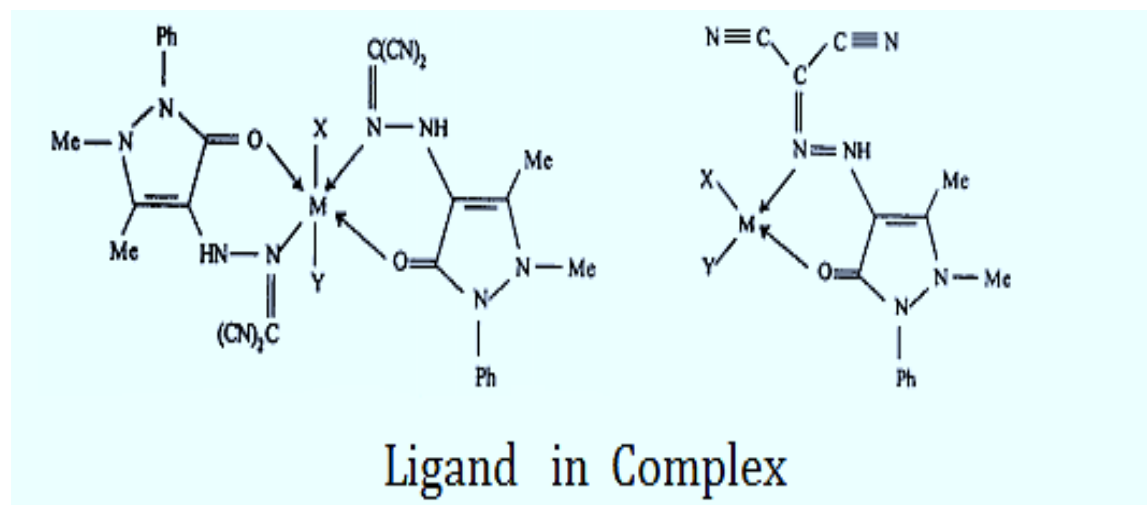
Anil group (-C=N-) is the effective group of the derivatives that know Imine compounds, which are usually prepared via the condensation reaction of primary aromatic amines and carbonyl groups (aldehyde or ketone). Imine compounds act important type of compounds in medicinal and pharmaceutical field and it has several applications in important bio- field , further move it represent as corrosion inhibitors⁽⁷⁶⁾:



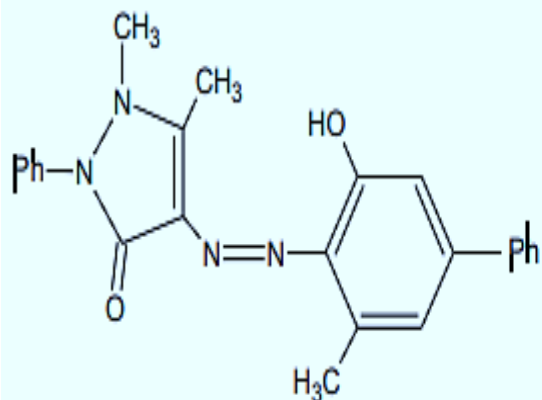
Antipyrine in azo compounds :



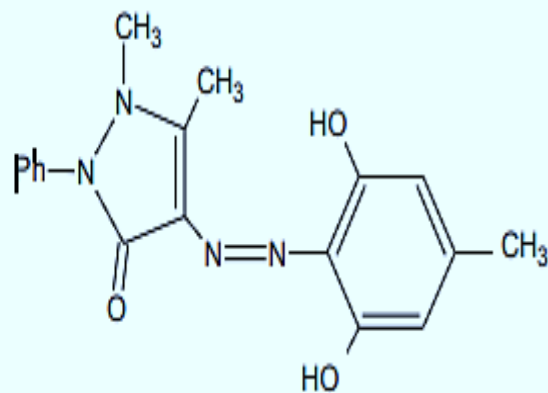
Imine bases - transition metal complexes are one of the most adjustable and totally studied systems ,these complexes have many applications in bio-clinical, industrial , analytical fields. Most of these complexes act important role in biological oxygen carrier systems⁽⁷⁴⁾. The formation and investigation of antipyrine derivatives have been described by number of articles:



And in liquid crystals applications. It is a temperature decreasing pyrazole derivative . It is one of the synthetic drugs and its complexes have some applications in analytical as a reagents and pharmacological applications .

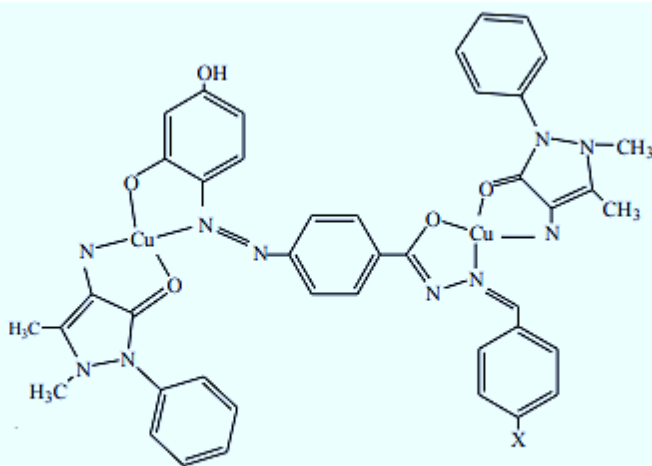


Antipyrine in azo compounds



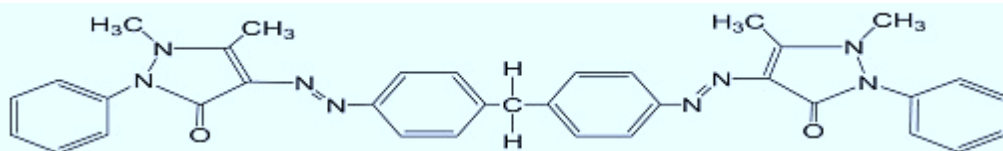
Antipyrine in azo compounds

It is also used in the preparation of azo dyes:



Antipyrine in azo compounds

Antipyrine and its derivatives are the extremely important active compounds and intermediates (involving di-nitrogen atoms in structures)⁽⁶⁰⁾ for formation of pharmaceuticals and natural compounds and products due to a wide range of uses, activities and applications⁽⁷⁹⁾:



Antipyrine in azo compounds

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