

Effect of novel heterocyclic compound on fertility in male albino rats

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The present study has been proposed to evaluate the antifertility activity of novel heterocyclic compound in male albino rats. The ethyl 1-(5-chloro-2-oxoindolin-3-ylideneamino)-1,2,3,6-tetrahydro-4-methyl-2-oxo-6-phenyl pyrimidine -5-carboxylate compound has been found to possess significant antifertility effect in rats. Intraperitoneal treatment of this compound (3mg/kg b.wt/day) for 21 days did not cause any effect on body weight. The weights of testis, cauda epididymis, seminal vesicles and ventral prostate were reduced significantly. Sperm suspension was obtained from cauda epididymis to calculate the sperm count, sperm motility sperm abnormality and fertility rate. There was a significant decrease in sperm count, sperm motility, fertility rate and a significant increase in sperm abnormality. The histological picture of testis is almost normal but the number of sperms were decreased and clumping of sperms were observed in the epididymal lumen and epithelial lining also shows degenerative changes.

Key words : Heterocyclic compound, Gonadosomatic index, Fertility, Cauda epididymis

INTRODUCTION

Population explosion is a global burning problem, which affects the health and economy of world. There is an increasing need for new means of population control throughout the world. The idea of population control as a governmental or societal-level regulation of population growth does not require fertility control in the sense that it has been defined above since a state can affect the growth of a society's population even if that society practices little fertility control. To control the population explosion, investigations are undertaken to discover an effective safe and low cost contraceptive methods.

The synthetic agents available today for fertility control produce severe side effects such as hormonal imbalance, hypertension and increased risk of cancer and weight gain (Rice Wray, 1971). Thus there is a need to replace these agents by safe and effective agents such as heterocyclic compounds as contraceptive agents. Due to existing and over whelming growth rate of world population, oral contraceptive has become need of the time. But steroids have various side effects (Absar *et al.*, 2006). This creates interest to review the existing options of heterocyclic compounds having antifertility activity. However, many modern medicines are developed through the clues obtained from heterocyclic compounds. More over the heterocyclic products even today are important resources for medicine and are becoming more popular.

The chemistry of heterocyclic lies at the heart of drug discovery (Tempest, 2005). Many known active

compounds contain heterocyclic cores which are indispensable elements for bioactivity (Houghteen *et al.*, 2000). The development of new fertility regulating drug from heterocyclic compounds is an attractive proposition because heterocyclics are widely utilized compounds in both pharmaceutical and agricultural fields (Lang and Lin-I, 1984). Consequently the development of methodologies useful for the assembly of molecules containing heterocyclic templates continues to attract the attention of both the academic and industrial communities (Rajanarendar *et al.*, 2008). Many heterocyclic compounds have been used as antifertility agents.

The new heterocyclic compound developed in the medicinal chemistry laboratories, University College of Pharmaceutical Sciences, Kakatiya University, Warangal has been selected for this study. This compound is prepared adopting the appropriate methods available in literature and is characterized by spectral data. The new compound possessing pyrimidine moiety because of structural similarities with nucleic acid bases exhibit various biological activities. Literature reveals that indole derivatives exhibit antifertility activity and aldose reductase inhibitory activity along with other biological activities. Keeping in view of biological significance of indole moiety and pyrimidine moiety present in the new compound, it is planed to study the effect of new compound ethyl 1-(5-chloro-2-oxoindolin-3-ylideneamino)-1,2,3,6-tetrahydro-4-methyl-2-oxo-6-phenyl pyrimidine -5-carboxylate on fertility activity adopting standard protocols available in literature.