PREFACE

Over the last three decades there has been an impressive rise in the use of contraceptives all over the world. A woman would prefer to prevent an unwanted pregnancy rather than having an abortion or carrying the pregnancy to term. Unintended pregnancies occur due to carelessness or lack of knowledge and improper use of contraceptives or failure of contraceptives. Various methods have been developed and are being devised to control the population and a number of contraceptive methods are now available to combat the rapid growth of population. In recent decades, a search for the "perfect contraceptive" has led to renewed interest in methods of female fertility regulation. Despite increased scientific research and public interest however, the ideal contraceptive procedure has remained elusive since many of them do not meet the components of such a technique with the requirement which includes high rate of effectiveness, low rate of complications, is reversible, economically affordable, non-toxic and with long shelf life.

Since time immemorial, human beings have used plants and plant products to relieve pain and cure many diseases. Plants have also served as natural sources of antifertility substances. The Central Drug Research Institute, Lucknow, in India has also screened numerous plants and their products for their potentiality for use as antifertility agents in both males and females. *Carica papaya* an important medicinal plant has gained impetus in this direction due to some promising results. Hence, the present study was an attempt to evaluate the contraceptive efficacy of papaya seed extracts viz. Methanol, Butanol, mixture of Aqueous:Benzene (1:1)
and Aqueous:Alcohol:Benzene (4:2:1) on female mice. The possible reversibility of the induced effects as well as toxicity studies were also carried out during the tenure of the study.

The investigations carried out revealed that papaya seed extracts did not manifest any estrogenic effects. The papaya seed extract were non-toxic as revealed by the LD$_{50}$ value which is much higher than the dose of 5g/kg body weight recommended by the WHO Protocol as of non-toxic nature for a plant product. The different papaya seed extract treatments did not promote body weight gain and electrolyte balance was maintained.

Ovarian structure and functions remained unaffected by the extract treatments as ovarian steroidogenesis, hormonal balance, ovulation and cyclicity remained unhampered. Ovarian and uterine nucleic acid metabolism and ultrastructure remained normal. The changes in uterine secretions and alterations in its histology suggested that the extracts altered the internal milieu of uterus and growth of its glands which might not be conducive for nidation nor implantation and thereby caused 100% reduction in fertility in experimental animals. The study also elucidated that all the extracts did not manifest any toxic side effects on the vital organs, viz. Liver, Kidney and all serum parameters.

However, all the induced effects were significantly recovered to almost normal state, after withdrawal of treatment. The fertility rate was restored back to normal. Hence, the effects of the papaya seed extracts were transient and reversible after withdrawal of treatment. Thus, it is concluded that different papaya seed extracts are effective at very low doses, are non-estrogenic, non-toxic with
reversible effects and could be used as an oral female contraceptive in rodents.

The thesis consists of Chapter I which gives an Introduction and a resume of earlier work. Chapter II deals with the various Materials and Methods used. Chapter III presents the Results of the study while in Chapter IV the results obtained are discussed in the light of earlier work. Chapter V contains the Summary and Conclusions. At the end, a Bibliography is given in an alphabetical and chronological order.

PUBLICATIONS:


