Chapter I

INTRODUCTION

Egypt has a very high rate of population growth, which is about 30 to 35 per 1000 per year(Omran, 1983). Because of population explosion, particularly in developing countries, the search continues for a safe, effective and acceptable method of fertility control.

Injectable long-acting progestogens were found to be effective contraceptive agents that are simple to administer and that require only limited contact with women. Since these agents are given by intramuscular injections, active participation on the part of patients is limited to maintenance of their injection schedule. As with oral contraceptive programs, participation by the physician may be limited to defining female population who is going to use the progestogen and to managing some of the unwanted events (King et al. 1978).

Now, two injectable contraceptives are in use namely; Depo Medroxyprogesterone Acetate (DMPA) and Norethisterone Enanthate (NET-EN). Both have a long duration of action, but their rate of metabolism varies widely among women (Fertility Care, 1985). Currently, DMPA is used as a contraceptive in more than 82 countries. It is estimated up to 1980, that more than 5 million women have been injected with the drug (Minkin, 1980).

In recent years, there has been a growing interest about alterations in various metabolic processes of mineral profiles associated with the use of hormonal contraceptives. Laker (1982), defined trace elements as: those elements which occur in the body at very low concentrations, that is, at less than 0.01% of the body's weight. It is now realized that despite their low concentrations, many such elements have important effects on the functioning of living organisms and at least eight elements are known to be essential for man namely; iron, zinc, copper, iodine, manganese, molybdenum, chromium and selenium. At least 3 more elements (flourine, vanadium and silicon) are probably essential (Mertz, 1981).

Essential physiological functions have been established for certain of these trace elements. Their functions are catalytic in nature, i.e. they act as direct activators of certain enzymes, or indirectly as essential components of vitamins and hormones (Cantarow and Schepartz, 1967).

Calcium, although it is not a trace element in the body, yet it has been implicated in virtually every metabolic function in the body and it is of major importance in bone formation, blood clotting mechanism and in activation of certain enzyme system (Guyton, 1981).

Magnesium is important for many functions as; enzyme, system,metabolism of lipids, carbohydrates and proteins, muscle contraction, stabilization and structure of DNA, RNA and ribosomes and is important for all amino acids activation (Prasad, 1978).

With oral contraceptives, a lot of studies were carried out on trace metals. Most of these studies agreed that serum levels of trace elements were affected in women using oral contraceptives, and it was found that serum levels of zinc decreased and that of copper increased (Tyrer, 1984).

On the contrary, previous studies about changes in serum levels of calcium, magnesium and trace elements occur in women using injectable progestins as contraceptive are few in number and offer little informations.

Simpson and Dale (1972), found that in women using DMPA, serum calcium levels showed no significant differences, but serum magnesium levels were significantly elevated over controls. No significant changes in serum levels of calcium and magnesium could be demonstrated after prolonged contraceptive use.

Prema et al. (1980), found that in women using DMPA and NET-EN, there was a decrease in serum zinc levels and that serum copper levels remained unaltered.

The scarcity of data on the effect of long-acting progestogen-only injectable contraceptives on serum trace elements, calcium and magnesium stimulated us to undertake this work.