INTRODUCTION

The common fig *(Ficus carica L.)* belongs to the family Moraceae. The majority of historians who investigated the origin of fig stated that its origin is in Asia Minor (Mac-Millan 1956, Krezdorn and Adrianco 1961, Oches et al. 1961, Bailey 1963, I and II). But Storey (1976) was of the opinion that it is a domesticated species native to Southern Arabia.

Fig was reported among the cultivated fruits of the old civilizations. Illustrations of The tree and fruit of the fig were found on the monuments and tombs of Ancient Egypt (Condit 1947, Krezdorn and Adrianco 1961 and Bahgat and Ezzat 1965). This group of plants is known to have existed in the Cretaceous period, and ancestors of the Fig wasps (chalcidoideae) lived as early as the Jurassic (Ma-W1, and Wu-Xg 1989).

Fig plant has a religious past, where it is mentioned in the Holly Quraan, (In the Name of Allah the Beneficient, The Merciful. By the fig and olive, By Mount Sinai, And by this land made safe;). Perhaps the mentioning of fig before olive may be due to the fact that fig was available in a time, which proceeded that of olive (Mohamed, 1970). Frequent reference to the Fig are made in the Bible, both old and new testaments (Condit 1947, Krezdorn and Adrianco 1961, Oches *et al.* 1961 and Bahgat and Ezzat 1965) and in the writings of Greek and Roman authors (Oches *et al.* 1961).

Fig has been distributed to all tropical and sub-tropical areas and grown commercially in most Mediterranean countries, as well as in California and Mexico (Krezdorn and Adrianco 1961, Oches *et al.* 1961 and Bahgat and Ezzat 1965). Most of the production is used as dried figs

because the high perishability of fresh figs makes them difficult to store and/or ship to expand the potential markets (Giancarlo, *et al.,* 1991).

In Egypt fig is one of the major fruits for local consumption. More than 50% of the total fig area is located along the coast of Alexandria as well as in Sinai governorate. Generally these areas have a dry climate where the average water precipitation is about 120 mm annually. The national production of fig attained about 159512 metric tons produced from 41877 feddans as reported by the Ministry of Agriculture (Adley, 1996).

Horticulturally figs are divided into four groups or types based upon kinds of flowers and the needs for pollination and fertilization. These are Capri fig, Smyrna fig, Common fig, and San Pedro fig (Krezdorn and Adrianco 1961, Oches *et al.* 1961, Bagdady and Menesi, 1964, Bahgat and Ezzat 1965, Saleeb 1965 and Higazy 1967). Common type fig varieties are the only varieties grown in Egypt. This type is completely parthenocarpic (Mohamed, 1970). The majority of the Orchards were cultivated with Sultani cultivar (El-Hefnawi *et al.,* 1995-I).

Aim of the study:

The present investigation was carried out on fig *(Ficus carica L.)* plant Sultani variety, which is considered the most commercial variety of fig cultivated in Egypt. Various names have been employed to describe it, for instance, Faiyumi, Barchomy, Seidi-Gaber, Ramady, and Higazy.

Fig is considered as an economic plant not only for its edible fruit but also for the wide benefits of the chemical components present in the fruit, leaf and tree latex as following.

1- Fig fruit contained calcium levels 3.2 times higher than other fruits and the ratio of calcium to phosphorus (a measure of calcium

availability) was 3.7 times higher in fig than in other fruits (O'Brien *et al.* 1998).

2- The fresh fruit is a fair source of vitamins A, B, and G (Bernice *et* 41959 and Kennard and Winters, 1960).

3- The dried fruits (treated with sulfur dioxide and potassium sorbate) are used as laxative (Singh and Jain, 1981).

4- Extracts of fig leaves showed more than 79% inhibition at a concentration of 1001.tg / ml for the activity of HIV II luman Immune deficiency virus]-1 against the viral-replication and also as inhibitors of reverse transcriptase (RT), protease and alpha-glucosidase activities (Yu-Young, 1998).

5- The latex of fig is used in several ways and it possesses medicinal properties (Singh and Jain, 1981).

6- The latex of fig tree was purified by ion exchange chromatography and used for the production of Antep cheese (Akar and Oner 1994)

The growth and development are accompanied with morphological and qualitative and quantitative changes of growth hormones, photosynthetic pigments, carbohydrates and nitrogenous constituents and mineral composition.

The aim of the present study was to relate the growth and development of tree and fruit to such changes.

The study includes two main experiments. The first experiment concerned with some morphological, hormonal and metabolic changes accompanying growth and development of fig *(Ficus carica)* tree represented by shoots and leaves. The first experiment concerned also