Onion (Allium cepa L.) and garlic (Allium sativum L.) are important members of the genus Allium, which is characterized by a strong sulphurous odour. They are essentially used as a spice and condiment while onion could be utilized also as vegetable. Onion and garlic are produced commercially in different forms such as volatile oil, dehydrated powder, slices and granules.

One of the outstanding features of the chemical compositions of Allium plants is the large amount of organic bound sulphur. The number of sulphur compounds is much larger than that usually found in most organisms. These sulphur compounds in onion and garlic have received a lot of attention because of their potential antibiotic and flavour properties (Stoll and Seebeck 1947 and 1951). The major antibiotic compound in garlic is allicin. Both onion and garlic are considered as medical plants which could be used as a remedy for some certain diseases, such as leucodermia and alopecia as mentioned by Goergy (1978). In addition to that pharmacological properties of onion there are many uses which were reported by Chopra (1958) it is used as antimicrobial, hypolgucaemic, hypocholesterolaemic, gonadotropic, goitrogenic, leucocytotic and antitumor activities.

Onion is one of the most popular vegetables cultivated extensively for human consumption. According to the centre of statistics, Ministry of Agriculture, Dokki, Giza, the total production of onion reached to 826459 Tons in 1986, which represent about 7% of the total cultivated onion in the world, and 70% of the total African productions. It is considered as one of the major exported agricultural commodities ranking after cotton, rice, and citrus.

On the other hand, garlic is considered as one of the major vegetable crops in Egypt which is used mainly for local consumption and exportation. According to the centre of statistics, Ministry of Agriculture, Dokki, Giza the total production of garlic reached to 82747 Tons in 1986. However, large amounts of the yearly production are wasted due to sprouting which is usually followed by decay.

Because of the importance of the essential oils of garlic and onion traded internationally many trials have been carried out for the adulteration of such oils. Also, the comparatively high prices offered for volatile oil often tempt some exporters to adulterate such products with foreign substances to such an extent that the adulterated product could easily pass the simple routine analysis. Such an adulteration, specially when carefully handled, might easily escape detection unless certain analytical procedures are applied carefully to detect the possible adulteration of essential oils. It is important to point out that the adulterants used for a particular volatile oil are undoubtedly different from other adulterants applied in the case of another essential oil.

Any attempt, either by producers or exporters, to adulterate onion or garlic oil will undoubtedly ruin the reputation of such a product abroad since such oils will be rejected or sold for a very cheap price and subsequently the demand for these oils will probably diminish.

Adulteration of essential oils depends mainly upon using adulterants containing organic molecules with a functional groups similar to those of the major constituents of the oils. However, the addition of certain

adulterant to essential oil might lead to change one or more of the physical and chemical properties of the oil extent that the results might throw some doubt that the sample could have suffered adulteration.

The added adulterant is usually chosen to impart no stranged odour which would be easily recognizad by the experts working in the field of essential oils. Paraffin oil represents the main mineral oil used for the adulteration of essential oils as reported by Guenther (1972). Paraffin oil is cheap, colourless and imparts no strange oil odour when added to essential oils. The same author reported that there is a possibility of adulterating essential oil with ethyl alcohol, methyl alcohol and diesters.

In addition to that Osman et al. (1974), reported that cotton seed oil and maize oil were used as adulterants for some essential oils.

Accordingly, it seems of primary importance to establish accurate analytical methods for detecting tracing adulteration with such adulterants.

The Ministry of Commerce is completely aware of such an issue and that is why several committees investigated the situation of essential oils in Egypt from all angles and various reports were submitted, all aiming to the improvement of the production and exportation of essential oils. One of the most important points which

was the thoroughly discussed deals with adulteration of volatile oils in general, where it was suggested that all batches should be subjected to an accurate analysis at some well equipped central laboratory before shipment abroad. It is needless to say that such a procedure will eventually lead to the production of authentic samples of onion and garlic oils of fine quality which when shipped abroad could compete with other types of commercial onion and garlic oils.

In this research work comparative studies for the analytical methods which could be used to detect the most common adulterants usually used in the adulteration of both onion and garlic oils were carried out in a trial to give sufficient information and clear cut which proves the authenticity of the exported allium oils.