Introduction

L-Asparaginase **(L-asparagine amidohydrolase EC 3.5.1.1)** isolated from several biological sources has been shown to possess antitumor activity **(Cooney & Handschmacher, 1970 and Oettgen *et al*, 1973).**

Kidd (1953) observed that certain transplanted lymphomas of mice and rats were strongly suppressed by treatment with guinea pig serum; **Broome (1961)** presented evidence that the antitumor principle of guinea pig serum is the enzyme L-asparaginase.

The finding of **Mashburn and Wriston (1964)** that L-asparaginase derived from ***Escherichia coli*** has antitumor activity similar to that of guinea pig serum opened up the possibility of large scale production of the enzyme for ultimate clinical trail. Subsequently; **Roberts *et al* (1966) and Campbell et *al*, (1967)** demonstrated that ***E. coli*** B L-asparaginase exists in two forms, one is active and the other is inactive against animal tumors. The two enzymes differ markedly in the pH activity profile their solubility and chromatographic behavior. ***E. coli*** K-12 was also shown to produce a biological active and inactive form of L-asparaginase **(Schwartz *et al*, 1966).** The active form which is produced only under anaerobic conditions and is located near the cell surface, differs from the inactive form in its affinity for substrate, its solubility in ammonium sulfate solutions and its sensitivity to thermal inactivation **(Cedar & Schwartz, 1967and Schwartz *et al*, 1966).**

Increasing availability of larger quantities of sufficiently purified L-asparaginase has made possible limited trails of therapy in large animals and man **(Hill *et al*, 1967)**. However, extensive clinical trails of L-asparaginase therapy against a variety of human neoplasm has not been possible. L-Asparaginase therapy alone or in combination with other drugs is finding increased success in the management of acute lymphocytic leukemia **(Barnes *et al*, 1977)**.

L-Asparaginase is available from a number of microbial sources including fungi **(Dox, 1909 and Bech, 1928)**, yeast **(Broome, 1965; Jones, 1970; Tadashi *et al*, 1977)** and bacteria **(De Groot & Lichtenstein, 1960; Heinemann & Howard, 1969; Tosa *et al*, 1972; Kafkewitz & Goodman, 1974; Albanese & Kafkewitz, 1978Tagami & Matsuda, 1990; Sobis & Mikucki, 1991, 1991a; Lubkowski *et al*, 1994 and Manna *et al*, 1995)**.

Studies on L-asparaginases from actinomycetes are rare **(Tsuji, 1957; Campbell & Mashburn, 1969; Dejong, 1972; Soru *et al*, 1972; Ali & OmKalthoom, 1979; El-Louboudy, 1982 and Abdel-Fatah, 1995; 1996)**.

Therefore, the present work was designed to study the production of L-asparaginase from ***Streptomyces phaeochromogenes*** FS-39, under static culture condition. Also, purification and characterization of ***S. phaeochromogenes*** FS-39 L-asparaginase were done as well.