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AN INVESTIGATION ON THE MAIN SECONDARY METABOLITES IN ESSENTIAL OIL AND VERIFYING POLYPHENOL PROPERTIES IN FENNEL EXTRACT (FOENICULUM VULGARE MILLER)

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Foeniculum vulgare Mill commonly called fennel is a medicinal plant belonging to the Umbelliferae (Apiaceae) family, known and used by humans since antiquity, due to its flavor. It is cultivated in almost every country, however, cultivated and being wildly grown in different part of Iran. In traditional medicine it has been used for its antioxidant, antitumor, chemo preventive, cytoprotective, hepatoprotective, hypoglycemic, and oestrogenic activities. As it is a common medicinal plant in house herbal drug shelf of lots of people the present study was conducted to identify the main secondary metabolites presented in fennel (*Foeniculum vulgare* Mill.) vegetative shoots native to Jahrom region in Fars province, Iran. It was done using GC technics and by calculating kovats index for each found compound. 32 compounds were found which was a wider range according to presence of revealed compounds in previous studies and perhaps it may be affected of ecotype and geographical parameters of the region. Trans-anethol, fenchone, estragole and limonene were the most major components. In the second part of this research, Methanol and water extract of Fennel were examined to compare the presence of polyphenol compounds in them based on BHT. The results indicated that the fennel shoot extracts contained appreciable levels of total phenolic contents. Of course methanol extract of fennel showed more polyphenol characteristics by the amount of 894 BHT, mg/100 g. according to the results of this research *Foeniculum vulgare* grown in this area can be nominated as a good source of traditional medicine and it can provides a noteworthy basis in pharmaceutical biology. It is suggested that more complementary studies would be operated in future to develop or formulate new drugs and future clinical uses based on this plant.

Keywords: essential oil, water extract, methanol extract, phenol determination, *foeniculum vulgar*