

Conclusion

As experimentally evident, it could be concluded that, the chemical analysis of the plant extract revealed the presence of tannins, flavonoids, alkaloids, steroids, terpenes and cardiac glycosides in the preliminary phytochemical screening, and a number of 29 compounds covering a wide range of fatty acids, phenols, triterpenoid and steroidal compounds detected by GC-MS analysis. The *in vitro* DPPH antioxidant assay revealed that the plant material possesses a concentration dependent antioxidant capacity.

In general, isolation and characterization of the active compounds of the traditionally used plants should be encouraged as it may impart a value addition to the traditional knowledge and use, enhance the pharmaceutical value, and evaluate the clinical importance of these natural products.

References

- [1] Abed El-Azim, M.H.M.; El-Mesalamy, A.M.D.; Yassin, F.A. and Khalil S.A. (2015). Identification Phenolic and Biological Activities of Methanolic Extract of Date Palm Pollen (*Phoenix dactylifera*). *Journal of Microbial Biochemical Technology* 7: 047-050.
- [2] Gabr, G.A.; Soliman, G.A.; Ganaie, M.A. and Hassan H.M.M. (2014). The Potential Protective Activity of Date Palm (*Phoenix dactylifera*) Pollen and Pinax ginseng Against Cisplatin-Induced Testicular Toxicity in Rats. *IJBPAS*. 3 (5): 605 - 623.
- [3] Abde-El-Mageed, M.M. (1987). Supplementation of snack food with pollen grains of date palm. *Egyptian Journal of Food Science*. 15: 7 - 25.
- [4] Mohamed, H. M. Abed El-Azim; Fathy, A. Yassin; Salam, A. Khalil and Amani, M. D. El-mesalamy (2015). Hydrocarbons, fatty acids and biological activity of date palm pollen (*Phoenix dactylifera* L.) growing in Egypt. *IOSR Journal of Pharmacy and Biological Sciences*. 10 (3): 46 - 51.
- [5] Bahmanpour, S.; Talaei, T.; Vojdani, Z.; Panjehshahin, M.R.; Poostpasand, A.; Zareei, S. and Ghaemina, M. (2006). Effect of *Phoenix dactylifera* Pollen on Sperm Parameters and Reproductive system of Adult Male Rats. *Iran J. Med. Sci*. 31: 208 - 212.
- [6] Almeida-Muradian, L.B.; Pamplona, L.C.; Coimbra, S. and Barth O.M. (2005). Chemical Composition and Botanical Evaluation of Dried Bee Pollen Pellets. *Journal of Food Composition and Analysis*. 18: 105 - 111.
- [7] Zaki, A.K.; Schmidt, J.; Hammouda, F.M. and Adam, G. (1993). Steroid constituents from pollen grains of *Phoenix dactylifera*. *Planta Medica*. 59 (7): 613 - 614.
- [8] Amer, W.M. and M.A. Saharan (1999). Palm trees in Egypt. *The International Conference on Date Palm*. Assuit University Center for Environmental Studies-Egypt. Conference book: 171 - 189.
- [9] Nagy, Morsy (2014). Phytochemical analysis of biologically active constituents of medicinal plants. *Main Group Chemistry*. 13: 7-21.
- [10] Sasidharan, S.; Chen, Y.; Saravanan, D.; Sundram, K.M. and Yoga Latha L. (2011). Extraction, Isolation and Characterization of Bioactive Compounds from Plants Extracts. *Afr. J. Tradit. Complement. Altern. Med*. 8 (1):1 - 10.
- [11] Al-Anber, Luma Jasim M. (2017). Estimation of the Content of Lipids and Fatty Acids in Pollen of *Phoenix dactylifera* (Date Palm) From Basrah, Iraq. *Bolivian Journal of Chemistry*. 34 (1): 9-13.
- [12] Abirami, P. and Rajendran, A. (2012). GC-MS Analysis of Methanol Extract of *Veronia cinerea*. *European Journal of Experimental Biology*. 2 (1): 9 - 12.
- [13] Anees, Ahmad; Abbas, F. M. Alkarkhi; Sufia, Hena and Lim, Han Khim (2009). Extraction, Separation and Identification of Chemical Ingredients of *Elephantopus Scaber* L. Using Factorial Design of Experiment. *International Journal of Chemistry*. 1 (1): 36 - 49.
- [14] Bahman, Nickavar; Mohamed, Kamalinejad and Hamidreza, Izadpanah (2007). In vitro free radical scavenging activity of five *Salvia* species. *Pakistan Journal of Pharmaceutical Science*. 20 (4): 291 - 294.
- [15] Zygmunt, B. and Namiesnik J. (2003). Preparation of Samples of Plant Material for Chromatographic Analysis. *Journal of Chromatographic Science*. 41: 109 - 116.
- [16] Tauqeer, Hussain Mallhi; Muhammad, Imran Qadir; Muhammad, Ali; Bashir, Ahmad; Yusra, Habib Khan and Atta-Ur-Rehman (2014). *Ajwa Date (Phoenix dactylifera): An Emerging Plant in Pharmacological Research*. *Pak. J. Pharm*. 27 (3): 607-616.
- [17] Bosila, H.A.; Mohamed, S.M.; El-Shrabasy, S.I.; Ibrahim, A.I. and Refay, K.A. (1993). Phytochemical screening of some *in vivo* and *in vitro* Date Palm tissues. *African Journal of Biotechnology*. 6 (7): 410-413.
- [18] Fayadh, J.M. and Al-Showiman, S.S. (1990). Chemical Composition of Date Palm (*Phoenix dactylifera* L.). *Jour.Chem.Soc.Pak*. 12 (1): 84-103.
- [19] Fawkeya, A. Abbas and Abdel-Monem, Ateya (2011). Estradiol, Esteriol, Estrone and Novel Flavonoids from Date Palm Pollen. *Australian Journal of Basic and Applied Sciences*. 5 (8): 606-614.
- [20] Nooman, A. Khalaf; Ashok, K. Shakya; Atif, Al-Othman; Zaha, El-Agbar and Husni, Farah (2008). Antioxidant Activity of Some Common Plants. *Turkish Journal of Biology*. 32: 51 - 55.
- [21] Amany, M. Basuny; Shaker, M. Arafat and Hanaa, M. Soliman (2013). Chemical analysis of olive and palm pollen: Antioxidant and antimicrobial activation properties. *Wudpecker Journal of Food Technology*. 1 (2): 14 - 21.
- [22] Sanni, S.; Thilza, I. B.; Ahmed, M. T.; Sanni, F. S.; Muhammed, Talle and Okwor, G. O. (2010). The effect of aqueous leaves extract of henna (*Lawsonia inermis*) in carbon tetrachloride induced hepato-toxicity in swiss albino mice. *Academia arena* 2 (6): 87 - 89.
- [23] Fazeleh, Moshfegh; Javad, Baharara; Farideh, Namvar; Saeedeh, Zafar-Balanezhad; Elaheh, Amini and Lobat, Jafarzadeh (2016). Effects of date palm pollen on fertility and development of reproductive system in female Balb/C mice. *Journal of HerbMed Pharmacology*. 5 (1): 23-28.