

*Full Length Research Paper*

# **Community pharmacists' knowledge and perspectives regarding the medicinal use of *Nigella Sativa* Seeds (*Ranunculaceae*),: A qualitative insight from Dubai, United Arab Emirates**

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Received 25 September, 2019; Accepted 2 December, 2019

The seeds of *Nigella sativa* (NS) (family: *Ranunculaceae*), (NS) are widely used as medicine throughout the world. It is very popular in various traditional systems of medicine like Unani and Tibb, Ayurveda and Siddha. Seeds and oils have a long history of folklore usage in various systems of medicines and food. The objective of this study was to investigate the knowledge of community pharmacists in Dubai, United Arab Emirates about the medicinal use of NS and the challenges facing the dispensing and/or the prescribing process. A qualitative research methodology was adopted in this study. The participants were licensed pharmacists recruited using Dubai health authority database. A sample of 36 pharmacists (19 male, 17 female) was interviewed using the semi-structured interviewing technique. Based on the content analysis of the interviews, four major themes have emerged. Future research might attempt to compare the knowledge and perceptions of different healthcare providers of the medicinal use of NS seeds. In conclusion, respondents are aware of the potential effect of NS products available at their pharmacies on several diseases.

**Key words:** *Nigella sativa*; black seeds; traditional medicine; community pharmacists; Dubai.

## **INTRODUCTION**

*Nigella sativa* (NS), which is often called black seeds or black cumin, is an annual flowering plant in the family Ranunculaceae, native to south and southwest Asia (Heiss and Oeggel, 2005). Since early 1970s, this herbal remedy has been extensively explored and studied for its therapeutic properties such as analgesic, anti-hypertensive, diuretic, antidiabetic, anticancer and

immunomodulatory, antimicrobial, anthelmintics, analgesics and anti-inflammatory, spasmolytic, bronchodilator, gastroprotective, hepatoprotective, renal protective and antioxidant properties, all attributed to its quinone constituents in the seeds (Kanter, 2008a, b; Anwar, 2005; Zafeer et al., 2012; Ulu et al., 2012; Ahmad et al., 2013). Besides that, there are new promising

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therapeutic properties of NS that have been recently explored like its positive role in treating the central nervous system (CNS)-related ailments (Sahak et al., 2016).

Nevertheless, NS is an important component of many civilizations' folklore. This is contributed to its ability to treat various diseases and assist the body in its own natural healing process (Goreja, 2003; Abel-Salam, 2012). However, the real re-exploration of NS was by Muslim scientists who extensively studied and observed its therapeutic effects on patients like what the Muslim physician and philosopher IbnSina, commonly known by scientists as Avicenna, had mentioned in his famous medical reference book "Canon of Medicine," which was used as the primary medical text book until the 17<sup>th</sup> century in Europe. In his writings, he stated that NS has preventative features as it stimulates the body's energy and helps in the recovery from fatigue. Ibn Sina also recommended NS as a remedy for fever, common colds, headache, toothache, skin diseases, wounds, fungus, parasites, and worms as well as against bites and stings by poisonous animals (Luetjohann, 1998; Sahak et al., 2016).

Due to its several therapeutic uses that have been discovered by great ancient civilizations, a lot of researchers endeavored to study NS from different angles. In addition, the availability of NS products in pharmacies as Complementary and Alternative Medicine (CAM) and higher patients' recognition and awareness of the comparatively lower risk of consuming CAM especially for chronic illnesses (Brink-Muinen and Rijken, 2006) elevated the need to conduct a study on the role of pharmacists in educating their patients on the therapeutic uses of NS. To date, there has been no single research exploring into the community pharmacists' knowledge and perspectives with regard to the medicinal use of NS seeds in Dubai, United Arab Emirates (UAE).

## MATERIALS AND METHODS

Semi-structured interviews were used to collect data in this research after extensive literature review and depending on a study done in Qatar (Kheir et al., 2014). The application of previously validated instruments to address pharmacy practice issues was found to be useful to ensure the instrument's validity and reliability (Felicity, 1997).

The participants were licensed pharmacists recruited using Dubai health authority (DHA) registered pharmacists' list that was adopted as the sampling frame. The sample of 36 pharmacists (19 male, 17 female) was randomly selected via a predetermined numbering system from a current list of approximately 2000 registered pharmacists in the software system of DHA within the control zone of the Government of Dubai, UAE. Selected candidates were then emailed a letter of invitation describing the study and their expected role. The study took place between January 10, 2017 and March 11, 2017. The appointed research team experts managed the arrangements for the time and place of interviews during the initial contact and obtained written consents from the participants prior to each interview.

The interviews mainly focused on exploring into the professional

**Table 1.** Participants' demographic data.

| Description        | N  |
|--------------------|----|
| <b>Age range</b>   |    |
| Under 30           | 2  |
| 30-40              | 11 |
| 41-50              | 13 |
| 51-60              | 7  |
| 60 +               | 3  |
| <b>Gender</b>      |    |
| Male               | 19 |
| Female             | 17 |
| <b>Nationality</b> |    |
| UAE national       | 7  |
| Expatriate         | 29 |

knowledge and attitudes of licensed pharmacists related to the medicinal use of NS in Dubai, UAE. Probing questions were used where necessary by the research team and the participants were given the freedom to express their views at the end of the interview session. Each interview was conducted by the researcher at the place and time convenient for the pharmacists and it lasted approximately twenty to thirty minutes. The research team conducted all the interviews in English, audio taped and transcribed them verbatim. The author verified the transcripts for their accuracy by listening to the tapes. Then, the transcripts were analyzed line by line, by reading them repeatedly and thematically analyzing their content (Creswell et al., 2004).

## RESULTS

Thirty six interviews were conducted by an independent research team. Among the 36 participants, 19 were males and 17 were females. The demographic characteristics of the respondents are shown in Table 1. The thematic content analysis yielded four major themes: 1) Perceptions about NS use, 2) Sources of NS knowledge, 3) CAM rules and regulations and 4) Challenges when dispensing and/or prescribing NS products.

### Perceptions about the use of NS

To investigate the way pharmacists in Dubai perceive the use of NS, they were asked about their personal experiences in dispensing and/or prescribing NS products to their patients. Almost all respondents (n=34) pointed to the use of NS products in hypertension. More than half of the participants (n=20) added other uses of NS oral-consumed products like being liver tonic, diuretic, digestive, anti-diarrheal, appetite stimulant, analgesic and anti-bacterial. Moreover, NS oil products were mentioned (n=6) to be helpful in skin disorders.

**Table 2.** Main indications of NS products in a selection of studies.

| N  | Indication  | Study  |
|----|---|--|
| 1  | Antidiabetic                                      | Al-Awadi et al. (1991), Al-Hader et al. (1993), Matira and Zesmin (2008) Mohamed et al. (2009) |
| 2  | Antimicrobial                                     | El-Kamali et al. (1998), Salem and Hossain (2000)  |
| 3  | Analgesic and Anti-inflammatory                   | Abdel-Fattah et al. (2000), Al-Ghamdi (2001)   |
| 4  | Antihyperlipedemic                                | Bahram et al., 2009; Ghanya et al. (2010)  |
| 5  | Effect on gastro-intestinal tract                 | Gilani et al. (2001), Abdel-Sater, 2009)   |
| 6  | Contraceptive and anti-fertility activity         | Keshri et al., 1995, Agarwal et al. (1990)   |
| 7  | Anxiolytic activities                             | Gilhotra and Dhingra (2011).   |
| 8  | Activities in Neuroinflammation Model             | Velagapudi et al. (2017)   |
| 9  | Against Traumatic Brain and Spinal Cord Injuries. | Üstün et al. (2014), Jakaria et al. (2018).  |
| 10 | Antipsychotic-like activities                     | Khan et al. (2014), Jakaria et al. (2018).   |
| 11 | Antioxidant defenses                              | Hamdy and Taha (2009).   |
| 12 | Antifungal activity                               | Rogozhin et al. (2011).  |

### Sources of NS knowledge

When asked about the main source of knowledge related to the medicinal use of NS, many respondents (n=24) connected it to their cultural backgrounds. The second category of knowledge was related to the undergraduate pharmacy studies (n=7). The third category was gained from their activity of surfing through the Internet (n=5).

### CAM rules and regulations

Most of the respondents (n=32) were not very sure about the rules and regulations related to dispensing and prescribing NS products in the UAE. They were aware about having a procedure of CAM registration by the health authorities; however, they were not sure about its steps. In addition, participants stated that the rules and regulations in different pharmacy sector control zones of the UAE do not require a prescription to dispense CAM.

### Challenges when dispensing and/or prescribing NS products

Almost half of the respondents (n=17) mentioned the trust concern while suggesting CAM to their patients. They pointed out that they notice that some pharmacy customers underestimate the role of pharmacists especially when it comes to prescribing a drug therapy or correcting a mistake in a prescription provided to them. Another challenge related to CAM is to stay up-to-date with all the necessary information required about its use, side effects, and drug-drug interactions (n=15).

### DISCUSSION

Based on the literature, hypertension is one of the most

important indications of NS seeds (El-Tahir et al., 1993, Zaoui et al., 2002, Yar et al., 2008). From the results of this qualitative study, most of the samples pooled mentioned hypertension as the first indication for NS seeds. Over the last two decades, other important indications of NS products have been suggested elsewhere by many researchers. Many of these indications were mentioned in this study by more than half of the pharmacists interviewed (n=20). Table 2 shows a selection of studies proving NS seeds' effectiveness in some diseases. In this table, indications mentioned by the respondents of this study are highlighted.

According to the results extracted from this study, many respondents connected their knowledge about NS with their cultural backgrounds. Black Seeds products are very famous traditional remedies in Muslim countries. The actual importance of NS to the Muslims came from the holy saying of the Prophet Mohammed about the Black Seeds where he named it as the medicine for every disease except death (Ghaznavi, 1991).

Despite being aware about having a procedure for registering CAM products in UAE; respondents were not very sure about its steps. They asserted that there are no binding rules and regulations which organize dispensing and/or prescribing CAM products in the country. Federal law number 4 of 1983 of pharmaceutical professions and institutions in the UAE describes the procedure of licensing pharmacists, pharmacy technicians and pharmaceutical institutions and organizations (MOH, 1983). Through the law's 97 articles, there are no guidelines regulating dispensing items in pharmacies in the UAE. However, the UAE Ministry of Health (MOH) published a booklet describing guidelines and minimum acceptable standards for good pharmacy practice in UAE pharmacies (MOH, 2003). In this booklet, MOH shed light on the general guidelines followed by the aspect of dispensing medicines in UAE pharmacies.

World Health Organization (WHO) issued a guideline

which defines the basic criteria for the evaluation of quality, safety and efficacy of herbal medicines with the goal of assisting national regulatory authorities, scientific organizations, and manufacturers in assessing documentation, submissions, and dossiers in respect of such products (WHO, 2006). Based on the results from the respondents, the main challenge while dispensing and/or prescribing NS products is the lack of trust from some pharmacy customers. A research paper about the role of community pharmacists in Dubai, UAE pointed to this particular issue of underestimation by some pharmacy customers especially when it comes to prescribing over-the-counter medicines (Rayaes et al., 2015).

## Conclusions

In conclusion, respondents are aware of the potential effects of NS products available at their pharmacies on several diseases such as hypertension. Their knowledge about NS is basically derived from their cultural backgrounds. They stated that there are no clear guidelines controlling the dispensing and/or prescribing of CAM in UAE. In addition, some participants felt underestimated by some pharmacy customers when they tried to prescribe CAM products to them. Future studies might compare the knowledge and perception of pharmacists on the medicinal use of NS in particular and CAM in general in different countries.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

## REFERENCES

- Abdel-Fattah AM, Matsumoto K, Watanabe H (2000). Antinociceptive effects of *Nigella sativa* oil and its major component, thymoquinone, in mice. *European Journal of Pharmacology* 14(1):89-97.
- Abdel-Sater K (2009). Gastroprotective effects of *Nigella sativa* oil on the formation of stress gastritis in hypothyroidal rats. *International Journal of Physiology, Pathophysiology and Pharmacology* 1:143-149.
- Abel-Salam BK (2012). Immunomodulatory effects of black seeds and garlic on all oxan-induced diabetes in albino rat. *Allergol Immunopathol (Madr)* 40(6):336-340.
- Agarwal C, Narula A, Vyas DK, Jacob D (1990). Effect of seeds of kalaunji on fertility and sialic acid content of the reproductive organs of male rat. *Geobios* 17:269-272.
- Ahmad A, Husain A, Mujeeb M, Khan SA, Najmi AK, Siddique NA, Damanhoury ZA, Anwar F (2013). A review on therapeutic potential of *Nigella sativa*: A miracle herb. *Asian Pacific Journal of Tropical Biomedicine* 3(5):337-352. doi: 10.1016/S2221-1691(13)60075-1. PMID: 23646296; PMCID: PMC3642442.
- Al-Awadi FM, Fatania H, Shamte U (1991). The effect of a plant mixture extract on liver gluconeogenesis in streptozotocin-induced diabetic rats. *Diabetes Research* 18(4):163-168.
- Al-Ghamdi MS (2001). Anti-inflammatory, analgesic and anti-pyretic activity of *Nigella sativa*. *Journal of Ethnopharmacology* 76:45-48.
- Al-Hader A, Aqel M, Hasan Z (1993). Hypoglycemic effect of volatile oil of *Nigella sativa* seeds. *International Journal of Pharmacology* 31(2):96-100.
- Anwar MA (2005). *Nigella sativa*: a bibliometric study of the literature on Habbat al-barakah. *Malaysian Journal of Library and Information Science* 10(1):1-18.
- Bahram PG, Vahideh EA, Maryam R, Abolfazi G (2009). Effect of dietary supplementation with *Nigella sativa* L. on serum lipid profile, lipid peroxidation and antioxidant defense system in hyperlipidemic rabbits. *Journal of Medicinal Plants Research* 3(10):815-821.
- Brink-Muinen AV, Rijken PM (2006). Does trust in health care influence the use of complementary and alternative medicine by chronically ill people? *BioMed Central Public Health* 6:188. Creswell JW, Fetters MD, Ivankova NV (2004). Designing a mixed methods study in primary care. *Annals of Family Medicine* 2(1):7-12.
- Creswell JW, Fetters MD, Ivankova NV (2004). Designing a mixed methods study in primary care. *Annals of Family Medicine* 2(1):7-12.
- El-Kamali HH, Ahmad AH, Mohammad AS, Yahia AA (1998). Antibacterial properties of essential oils from *Nigella sativa*. *Fitoterapia* 69:77-78.
- El-Tahir KE, Ashour MM, Al-Harbi MM (1993). The cardiovascular effects of the volatile oil of black seed (*Nigella sativa*) in rats: elucidation of the mechanism(s) of action. *General Pharmacology* 24(5):1123-1131.
- Felicity S (1997). Survey research: Survey instruments, reliability and validity. *International Journal of Pharmacy Practice* 5:216-226.
- Ghanya AN, Adel S, Al-Zubairi AS, Maznah I, Zulkhairi HA, Norhaizan ME (2010). Antiatherogenic Potential of *Nigella sativa* Seeds and Oil in Diet-Induced Hypercholesterolemia in Rabbits. *Evidence-Based Complementary and Alternative Medicine* 2011:8.
- Ghaznavi KM (1991). *Tibbe-e-Nabvi aur Jadid Science*, Al-Faisal Nasheeran wa Tajeera-e- Kutab [Urdu]. Urdu Bazar Lahore, Pakistan 1:228-236.
- Gilani AH, Aziz N, Khurram IM, Chaudhary KS, Iqbal A (2001). Bronchodilator, spasmolytic and calcium antagonistic activities of *Nigella sativa* seed (Kalonji): a traditional herbal product with multiple medicinal uses. *Journal of Pakistan Medical Association* 51(3):115-120.
- Gilhotra N, Dhingra D (2011). Thymoquinone produced antianxiety-like effects in mice through modulation of GABA and NO levels. *Pharmacological Reports* 63(3):660-669.
- Goreja WG (2003). *Black Seed: Nature's Miracle Remedy*. New York, NY, USA: Amazing Herbs Press.
- Hamdy NM, Taha RA (2009). Effects of *Nigella sativa* oil and thymoquinone on oxidative stress and neuropathy in streptozotocin-induced diabetic rats. *Pharmacology* 84(3):127-134.
- Heiss AG, Oeggel K (2005). The oldest evidence of *Nigella damascena* L. (Ranunculaceae) and its possible introduction to central Europe. *Vegetation History and Archaeobotany* 14(4):562-570.
- Jakaria MD, Cho D-Y., Ezazul HMD, Karthivashan G, Kim I-S., Ganesan P, Choi D-K (2018). Neuropharmacological potential and delivery prospects of thymoquinone for neurological disorders. *Oxidative Medicine and Cellular Longevity* Article ID 1209801, 17 pages <https://doi.org/10.1155/2018/1209801>:1209801.
- Kanter M (2008a). *Nigella sativa* and derived thymoquinone prevents hippocampal neurodegeneration after chronic toluene exposure in rats. *Neurochemical Research* 33(3):579-588. doi: 10.1007/s11064-007-9481-z.
- Kanter M (2008b). Protective effects of *Nigella sativa* on the neuronal injury in frontal cortex and brain stem after chronic toluene exposure. *Neurochemical Research* 33(11):2241-2249. doi: 10.1007/s11064-008-9702-0.
- Keshri G, Singh MM, Lakshmi V, Kamboj VP (1995). Post-coital contraceptive efficacy of the seeds of *Nigella sativa* in rats. *Indian Journal of Physiology and Pharmacology* 39(1):59-62.
- Khan RA, Najmi AK, Khuroo AH, Goswami D, Akhtar M (2014). Ameliorating effects of thymoquinone in rodent models of schizophrenia. *African Journal of Pharmacy and Pharmacology* 8(15):413-421.
- Kheir N, Gad HY, Abu-Yousef SE (2014). Pharmacists' knowledge and attitudes about natural health products: a mixed-methods study. *Drug, Healthcare and Patient Safety* 6:7-14.

- Luetjohann S (1998). The Healing Power of Black Cumin. Silver Lake, Wisconsin, USA: Lotus Light.
- Matira K, Zesmin FD (2008). Effects of the crude and the n-hexane extract of *Nigella sativa* Linn. (kalajira) upon diabetic rats. Bangladesh Journal of Pharmacology 4:17-20.
- MOH UAE (1983). UAE Federal Law number: 4, 1983 of Pharmaceutical Professions and Institutions. Available: <http://www.dha.gov.ae/EN/SectorsDirectorates/Directorates/HealthRegulation/LegislationNPolicies/Documents/Pharmacy%20Federal%20Law.pdf> [Accessed 25 Sept 2017].
- MOH UAE (2003). Guidelines and Minimum Standards for Good Pharmacy Practice in UAE Pharmacies. Available: [http://www.cpdpharma.ae/index.php?option=com\\_phocadownload&view=category&download=76:ministry-of-health-guideline-and-minimum-standards-for-good-pharmacy-practice-gpp-version-1-2003&id=2:moh-policies-and-circulars&Itemid=78](http://www.cpdpharma.ae/index.php?option=com_phocadownload&view=category&download=76:ministry-of-health-guideline-and-minimum-standards-for-good-pharmacy-practice-gpp-version-1-2003&id=2:moh-policies-and-circulars&Itemid=78) [Accessed 25 Sept 2017].
- Mohamed AM, EL-Sharkawy FZ, Ahmed SA, Aziz WM, Badary OA (2009). Glycemic Control and Therapeutic Effect of *Nigella sativa* and Curcuma longa on Rats with streptozotocin-induced Diabetic Hepatopathy. Journal of Pharmacology and Toxicology 4(2):45-57.
- Rayes IK, Hassali MA, Abduelkarem AR (2015). Perception of community pharmacists toward their current professional role in the healthcare system of Dubai, United Arab Emirates. Saudi Pharmaceutical Journal 23:235-240.
- Rogozhin EA, Oshchepkova YI, Odintsova TI, Khadeeva NV, Veshkurova ON, Egorov TA (2011). Novel antifungal defensins from *Nigella sativa* L. seeds. Plant Physiology and Biochemistry 49(2):131-137.
- Sahak MK, Kabir N, Abbas G, Draman S, Hashim NH, Adli DS (2016). The Role of *Nigella sativa* and Its Active Constituents in Learning and Memory. Evidence-Based Complementary and Alternative Medicine 2016:6075679.
- Salem ML, Hossain MS (2000). Protective effect of black seed oil from *Nigella sativa* against murine cytomegalovirus infection. International Journal of Immunopharmacology 22:729-740.
- Ulu R, Dogukan A, Tuzcu M, Gencoglu H, Ulas M, Ilhan N (2012). Regulation of renal organic anion and cation transporters by thymoquinone in cisplatin induced kidney injury. Food and Chemical Toxicology 50(5):1675-1679.
- Üstün N, Aras M, Ozgur T (2014). Thymoquinone attenuates trauma induced spinal cord damage in an animal model. Ulusal Travma ve Acil Cerrahi Dergisi 20(5):328-332.
- Velagapudi A, Kumar HS, Bhatia (2017). Inhibition of neuroinflammation by thymoquinone requires activation of Nrf2/ARE signaling. International Immunopharmacology 48:17-29.
- World Health Organization (WHO) (2006). WHO guidelines for assessing quality of herbal medicines with reference to contaminants and residues. Available: <http://apps.who.int/medicinedocs/documents/s14878e/s14878e.pdf> [Accessed 25 Sept 2017].
- Yar T, El-Hariri M, EL-Bahai MN, Bamosa AO (2008). Effects of *Nigella sativa* supplementation for one month on cardiac reserve in rats. Indian Journal of Physiology and Pharmacology 52(2):141-148.
- Zafeer MF, Waseem M, Chaudhary S, Parvez S (2012). Cadmium-induced hepatotoxicity and its abrogation by thymoquinone. Journal of Biochemical and Molecular Toxicology 26(5):199-205.
- Zaoui A, Cherrah Y, Aloui K, Mahassine N, Amarouch H, Hassar M (2002). Effect of *Nigella sativa* fixed oil on blood homeostasis in rat. Journal of Ethnopharmacology 79(1):23-26.