MEDI HERB
a phytotherapist's perspective
Not for Public Distribution. For Professional Use Only.
No. 153 April 2019

Major Therapeutic Activity of Nigella Seed

Key Points at a Glance

Nigella Seed

- peppery-tasting seed used in cooking
- extensive traditional use, particularly in India and the Middle East
  - wide range of conditions, especially relating to digestion, metabolism and the female reproductive system
- contains a fixed oil and a volatile oil

Indications

- Adjunct in treatment of diabetes, metabolic syndrome and hyperlipidaemia.
- Dyspepsia, poor appetite, flatulent colic, diarrhoea; gastrointestinal infections and worm infestation.
- Allergic rhinitis, fever, colds.
- Dysmenorrhoea, menopause.
- Adjunct in treatment of polycystic ovarian syndrome, male infertility.
- Conditions of low thyroid function and poor liver function.

Safety

- Low toxicity.
- Some minor gastrointestinal adverse effects can occur occasionally; may help to take after meals.
- Information is inconclusive, but caution is advised in those with anaemia and it may be advisable to monitor haemoglobin levels in patients generally, when high doses are prescribed (≥ 3 g/day). A beneficial effect may occur for patients with beta-thalassaemia.
- Allergic reactions more common for oil than seed.
- Contraindicated in pregnancy. May be best avoided in women wishing to conceive (conflicting results from animal studies).

Clinical Studies

- hypoglycaemic effect in type 2 diabetic patients with poor glycaemic control (most common dose: 2 g/day)
  - effects include improved beta-cell function
- hypoglycaemic effect in metabolic syndrome (mixed results)
- lipids reduced in diabetes and metabolic syndrome (often 2 g/day)
- some lipid-lowering effects in hyperlipidaemia (2–4 g/day)
- some lipid-lowering effects in coronary artery disease (0.5 g/day) and overweight women, menopause, PCOS, Hashimoto's (about 2 g/day)
- mild hypotensive effect (mixed results)
- beneficial effects in allergic rhinitis (0.25–2 g/day, alone or combined with immunotherapy), and some improvement in asthma (1–2 g/day)
- improved thyroid status in Hashimoto's thyroiditis (2 g/day), relieved pain in dysmenorrhoea (3–4 g/day), beneficial effects in PCOS (2 g/day; processed with vinegar), improved symptoms in menopause (1.6 g/day)
- some cognitive benefit in elderly (1 g/day), improved mood in healthy adolescents (0.5 g/day) and those with dysmenorrhoea
- reducing effect on body weight not consistently demonstrated
  - beneficial effects found when diet was considered: obese participants at risk of metabolic syndrome (3 g/day) and Hashimoto's thyroiditis (2 g/day)
- improved semen parameters in male infertility (2 g/day)
- some benefit in NAFLD, occurrence of febrile neutropaenia (high dose), *Helicobacter pylori* infection, cestode infestation, opioid dependence (after the acute withdrawal stage), early-formed kidney stones, psoriasis
- increased oxytocin in lactating women (1.2 g/day combined with massage)

Nigella sativa seed, commonly known as black cumin or black seed, is small (2 mm long and 1 mm wide), flat, angular shaped, and black in colour. It has a slightly aromatic smell and a bitter, peppery taste. Nigella seed has a long history of medicinal and culinary use particularly in the Middle East and Asia and is commonly used in the cuisines of these regions, especially on breads.

Nigella seed is traditionally used in India and the Middle East for indigestion, loss of appetite, fever, diarrhoea, dropsy, general weakness, asthma, dysmenorrhoea, amenorrhoea and arthritis. It has a wide range of actions, in particular: carminative, diaphoretic, expectorant, anthelmintic, emmenagogue, diuretic and galactagogue.[1-3]

As a medhya herb, Nigella promotes brain functioning, e.g. by enhancing clear thinking and concentration, and provides a specific tonic effect on the nerve tissues e.g. calms the mind. Other applications in Ayurveda: congested liver, jaundice and poor fat metabolism.[1]

Nigella seed is used to treat diabetes and hypertension in south-east Morocco.[4] This contemporary use is likely to reflect traditional practices.

The common name given to Nigella (Habbat-el-barakah) means 'seeds of blessing' in Arabic. Avicenna referred to it as the seed that stimulates the body's energy and helps recovery from fatigue and dispiritedness.[5] There is an Arabic proverb: "In the black seed is the medicine for every disease except death".[6]

Constituents

The main constituents of *Nigella sativa* seed are the fixed oil and volatile oil (< 2%). Minor constituents include saponins and alkaloids. The fixed oil contains fatty acids. Major constituents of the volatile oil include thymoquinone, carvacrol and p-cymene.[7,8]

The quantities of the volatile oil constituents vary, although thymoquinone (a potentially important active constituent) is commonly present in the seed at about 0.1–0.25%.[8,9] Other analyses have the content of thymoquinone much lower, and absent in powdered seed. Thymoquinone content also decreases during storage (over months) and in preparations processed with vinegar or containing honey.[10,11]

Clinical Studies

Hypoglycaemic Activity

Diabetes & Metabolic Syndrome

A Saudi Arabian study tested several doses of Nigella seed in type 2 diabetic patients with poor glycaemic control (defined as two readings of glycosylated haemoglobin (HbA1c) of greater than 7%, conducted 3 months apart) who were taking oral hypoglycaemic drugs. They received capsules containing powdered seed: 1 g/day, 2 g/day or 3 g/day for 12 weeks. Significant **improvement in glycaemic control** (fasting blood glucose, HbA1c, insulin resistance) was found for the 2-g/day dose. The results were not significant at 1 g/day and no additional improvement was found for the 3-g/day dose. Some minor gastrointestinal discomfort was noted, and was relieved by taking the herb capsules after meals.[12]

Another Saudi Arabian trial found Nigella powdered seed (2 g/day) taken for one year improved glucose homoestasis in patients with poorly-controlled type 2 diabetes (two readings, 3 months apart of HbA1c of greater than 7%) who were using oral hypoglycaemic drugs. Treatment resulted in significantly reduced fasting blood glucose (FBG), HbA1c and insulin resistance and **significantly increased beta-cell function** from baseline values. (The latter two parameters were calculated using the FBG and C-peptide levels.) Improvements were also significant at 3, 6 and 9 months. The placebo group did not experience improvements in these parameters or worsened at some time periods. Comparison between the groups found a significantly lower HbA1c ($p \leq 0.05$) in the Nigella group at 6 and 9 months compared to the control group, and similarly, FBG was significantly lower at 3 and 6 months (despite a substantially higher level at baseline in those receiving Nigella ($p = 0.06$)). No mention was made about diet and lifestyle throughout the trial.[13]

A placebo-controlled, crossover trial conducted in Pakistan assessed the effect of capsules containing powdered seed (0.7 g/day) for 40 days in type 2 diabetics. Participants had fasting blood glucose levels greater than normal values, despite taking their usual oral diabetes medications. Significant improvement from baseline was found after treatment with Nigella: fasting blood glucose decreased by 3.69 mmol/L (30.8%) and insulin increased by 1.96 µIU/mL (27.9%). The results reversed significantly by the end of the placebo phase.[14,15]

Treatment with Nigella powdered seed (2 g/day) significantly reduced levels of fasting blood glucose (from a baseline of 14.9 mmol/L) and serum uric acid after 28 and 42 days in poorly-controlled diabetics who were taking oral hypoglycaemic drugs.[16]

An Indian trial found that Nigella significantly improved fasting blood glucose and HbA1c in type 2 diabetic patients with poor glycaemic control (HbA1c > 7%) who were taking metformin. *Nigella sativa* seeds were chewed and consumed at a dose of 2 g/day for 8 weeks. The decreases in FBG (12.8%) and HbA1c (13.8%) from baseline were significant ($p < 0.001$). Significant changes were not observed in the control group who were taking only drug medications. The baseline levels of these parameters were higher in the Nigella group (about 15% higher for FBG).[17]

An Egyptian study found a hypoglycaemic effect for Nigella tea (daily dose: 5 g of seed) in 41 diabetics who were taking oral hypoglycaemic drugs and were free of diabetic complications. The study was conducted for 6 months, and was essentially uncontrolled, although 25 healthy volunteers with baseline values within the normal range (FBG: 4.41 mmol/L), were also treated. The improvements in the healthy volunteers were about 50% of that achieved in the diabetics.[18,19] (Note: The reduction in fasting blood glucose experienced by these healthy volunteers has not been observed in others with FBG levels in the normal range. For example, no effect on FBG occurred in three studies (1–2 g/day for 4–12 weeks; baseline: 4.5–5.3 mmol/L),[20-22] and the reduction was not significant compared to controls in another trial (2 g/day for 6 weeks; baseline: < 5.4 mmol/L).[23])

The addition of capsules of Nigella seed (0.5 g/day) to standard drug treatment for 6 weeks in patients with symptoms of metabolic syndrome resulted in a greater improvement in fasting blood glucose than in those treated with drugs alone (decrease from baseline of 28.7% vs 14.8%, respectively; $p = 0.01$). The baseline values were 9% higher in the Nigella group. Patients were

advised to adhere to a recommended diet and exercise schedule.[24]

In patients recently diagnosed with metabolic syndrome who were not on any other medication and took capsules of Nigella powdered seed at a dose of 1.5 g/day for 8 weeks, the decrease in fasting blood glucose (8.2%) from baseline did not reach statistical significance, but was significant when compared to the placebo group who received 1.5 g/day of psyllium (p = 0.02).[25]

For more details of some of these trials see Table 1.

Hypolipidaemic Activity

Diabetes & Metabolic Syndrome

In many of the trials discussed above, treatment with Nigella significantly improved lipid levels in those with diabetes, metabolic syndrome or risk thereof.[15-17,19,24-27] *See Table 2 for additional details.*

In a randomised, single-blind, placebo-controlled trial, Nigella powdered seed (3 g/day) was taken by participants at risk of developing metabolic syndrome (having 3 of the 5 risk factors). At the end of the 12-week treatment, **lipid levels were significantly improved** from baseline ($p \leq 0.001$): total cholesterol (-0.32 mmol/L), HDL-cholesterol (0.24 mmol/L), LDL-cholesterol (-0.22 mmol/L), triglycerides (-0.09 mmol/L). The results were also significant when compared to the lipid profile of the placebo group. Food intake and physical activity for those receiving Nigella did not change significantly during the trial.[28]

Supplementation with capsules containing Nigella powdered seed (1 g/day) for 2 months significantly improved lipid levels of menopausal women at moderate risk of hyperlipidaemia who had slightly elevated blood pressure (systolic blood pressure around 130 mmHg). (Total cholesterol and LDL-cholesterol levels were borderline high and high at baseline: approx. 6.1 mmol/L and 4.6 mmol/L, respectively.) Mean total cholesterol of the herb group decreased significantly by 16.1% at 2

	Parameter	Baseline	After Nigella Treatment (% change)	Ref
Diabetes				
2 g/day powdered seed for 12 weeks; poor glycaemic control[1,2a,3a]	fasting plasma glucose (mmol/L)	12.0	8.9 (-26.0%)*	12
	HbA1c (%)	9.09	7.57 (-16.7%)†	
	insulin resistance index	3.20	2.37 (-25.9%)§	
	beta-cell function (%)	45.03	63.63 (41.3%)‡	
2 g/day powdered seed for one year; poor glycaemic control[1,2b,3b]	fasting plasma glucose (mmol/L) at 3 mo	10.7	9.0 (-16.4%)‡	13
	fasting plasma glucose (mmol/L) at 6 mo	10.7	9.0 (-15.9%)*	
	fasting plasma glucose (mmol/L) at 9 mo	10.7	9.7 (-9.7%)‡	
	fasting plasma glucose (mmol/L) at 12 mo	10.7	9.5 (-11.8%)‡	
	HbA1c (%) at 3 mo	8.6	7.9 (-8.1%)*	
	HbA1c (%) at 6 mo	8.6	7.8 (-9.3%)*	
	HbA1c (%) at 9 mo	8.6	7.9 (-8.1%)‡	
	HbA1c (%) at 12 mo	8.6	8.2 (-4.7%)^	
0.7 g/day powdered seed for 40 days[1,2c,3d]	fasting plasma glucose (mmol/L)	11.96	8.28 (-30.8%)*	15
	insulin (µIU/mL)	7.00	8.96 (28.0%)*	
5 g/day seed, as a tea, for 6 months[1,2a,3e]	fasting plasma glucose (mmol/L) at 3 mo	8.21	6.96 (-15.0%)∅	18
	fasting plasma glucose (mmol/L) at 6 mo	8.21	7.02 (-14.2%)∅	
	HbA1c (%) at 3 mo	7.18	6.59 (-8.2%)∅	
	HbA1c (%) at 6 mo	7.18	6.02 (-16.2%)∅	
2 g/day seed for 8 weeks; newly-diagnosed and with poor glycaemic control[1,2d,3c]	fasting plasma glucose (mmol/L)	9.11	7.94 (-12.9%)*	17
	HbA1c (%)	8.11	6.99 (-13.8%)*	
Metabolic Syndrome				
0.5 g/day seed for 6 weeks[1,2d,3c]	fasting plasma glucose (mmol/L)	7.52	5.36 (-28.7%)‡	24
1.5 g/day powdered seed for 8 weeks; recently diagnosed and not drug medicated[2d,3b]	fasting plasma glucose (mmol/L)	6.70	6.15 (-8.2%)**	25

Table 1. Hypoglycaemic activity of Nigella in patients with diabetes or metabolic syndrome.

Notes: 1: taking oral hypoglycaemic drugs; 2a: maintained diet and lifestyle; 2b: diet and lifestyle not mentioned; 2c: no significant change in diet or physical activity; 2d: advice given on diet and lifestyle; 3a: no placebo or control group; 3b: placebo-controlled; 3c: controlled (drug vs drug + Nigella); 3d: placebo-controlled cross-over study: Nigella then placebo, FBG and insulin results significantly deteriorated after placebo; 3e: uncontrolled

Symbols: * $p < 0.001$; † $p < 0.0001$; § $p < 0.01$; ‡ $p < 0.05$; ^ $p = 0.01$; ∅ $p \leq 0.001$ ** not significant but level in herb group at completion was significant different from that of the placebo group

	Parameter	Baseline	After Nigella Treatment (% change)	Ref
Diabetes				
2 g/day powdered seed for 12 weeks; poor glycaemic control[1,2a,3a]	total cholesterol (mmol/L)	5.05	4.49 (-11.1%)†	26
	LDL-cholesterol (mmol/L)	3.25	2.71 (-16.8%)†	
	triglycerides (mmol/L)	2.17	1.68 (-22.2%)§	
2 g/day powdered seed for one year; poor glycaemic control[2b,3b]	total cholesterol (mmol/L) at 6 mo	5.02	4.59 (-8.5%)*	27
	total cholesterol (mmol/L) at 9 mo	5.02	4.66 (-7.2%)*	
	total cholesterol (mmol/L) at 12 mo	5.02	4.67 (-7.0%)*	
	LDL-cholesterol (mmol/L) at 3 mo	3.27	2.95 (-9.7%)*	
	LDL-cholesterol (mmol/L) at 6 mo	3.27	2.77 (-15.3%)*	
0.7 g/day powdered seed for 40 days[1,2c,3d]	total cholesterol (mmol/L)	5.14	4.72 (-8.1%)^	15
	LDL-cholesterol (mmol/L)	3.14	2.79 (-11.4%)^^	
	HDL-cholesterol (mmol/L)	1.01	1.07 (5.1%)†	
	triglycerides (mmol/L)	2.18	1.90 (-12.9%)^	
5 g/day seed, as a tea, for 6 months[1,2a,3e]	total cholesterol (mmol/L) at 3 mo	6.31	5.64 (-10.6%)∅	19
	total cholesterol (mmol/L) at 6 mo	6.31	5.43 (-13.9%)∅	
	LDL-cholesterol (mmol/L) at 3 mo	4.32	3.96 (-8.3%)∅	
	LDL-cholesterol (mmol/L) at 6 mo	4.32	3.79 (-12.2%)∅	
	triglycerides (mmol/L) at 3 mo	2.15	1.61 (-24.8%)∅	
	triglycerides (mmol/L) at 6 mo	2.15	1.29 (-40.0%)∅	
	HDL-cholesterol (mmol/L) at 3 mo	1.05	1.38 (31.5%)∅	
	HDL-cholesterol (mmol/L) at 6 mo	1.05	1.46 (39.7%)∅	
2 g/day seed for 8 weeks; newly-diagnosed and with poor glycaemic control[1,2d,3c]	LDL-cholesterol (mmol/L)	4.23	3.05 (-28.0%)^	17
Metabolic Syndrome				
0.5 g/day seed for 6 weeks[1,2d,3c]	LDL-cholesterol (mmol/L)	4.26	3.08 (-27.8%)**	24
	HDL-cholesterol (mmol/L)	1.17	1.57 (34.6%)**	
1.5 g/day powdered seed for 8 weeks; recently diagnosed and not drug medicated[2d,3b]	total cholesterol (mmol/L)	4.77	4.21 (-11.7%)^	25
	triglycerides (mmol/L)	1.91	1.60 (-16.3%)^	

Table 2. Hypolipidaemic activity of Nigella in patients with diabetes or metabolic syndrome.

Notes: 1: taking hypolipidaemic drugs; 2a: maintained diet and lifestyle; 2b: diet and lifestyle not mentioned; 2c: no significant change in diet or physical activity; 2d: advice given on diet and lifestyle; 3a: no placebo or control group; 3b: placebo-controlled; 3c: controlled (drugs vs drugs + Nigella); 3d: placebo-controlled cross-over study: Nigella then placebo; levels of total cholesterol, LDL-cholesterol and triglycerides significantly deteriorated after placebo and the decrease in HDL-cholesterol after placebo was not significant; 3e: uncontrolled, although healthy volunteers with good/healthy baseline levels were also treated and beneficial effects found e.g. at 6 months total cholesterol and triglycerides had decreased by 9.4% and 14.7%, from baseline levels of 2.08 mmol/L and 0.94 mmol/L, respectively **Symbols:** p values given for difference from baseline, except where noted: † $p < 0.05$; § $p < 0.01$; * significantly lower than placebo group: total cholesterol at 6, 9 and 12 months, $p = 0.007$, $p = 0.05$, $p = 0.02$, respectively; LDL-cholesterol at 3 and 6 months, $p = 0.03$, $p = 0.004$, respectively; ^ $p < 0.001$; ^^ $p = 0.001$; ∅ $p \leq 0.001$; ** significantly different from the control group ($p = 0.003$ for both lipids): LDL-cholesterol was lowered by 7.8% in the control group, with baseline values 17.4% higher in the Nigella group, and HDL-cholesterol was raised by 26% in the control group, with similar baseline values

months compared to baseline ($p < 0.05$) and the decrease was significantly greater than that of the placebo group ($p < 0.05$). Similarly, the decreases in LDL-cholesterol and triglycerides were significant compared to baseline (27.2% and 22.2%, respectively) and in comparison to the placebo group. HDL-cholesterol was not significantly different. Participants were asked to maintain their diet and physical activity.[29]

Other Conditions

The lipid-lowering effect of Nigella seed has also been investigated in other patients with unhealthy levels of lipids, with varying results. Trials of more rigorous design may be needed to confirm this activity. The results of controlled trials of such patients are *summarised in Table 3*. In many of these studies a statistical comparison between the treatment and control groups was not conducted, and changes to diet were generally not considered.

Some results from a controlled trial comparing the effect of Nigella seed and powder in Saudi Arabian adults with hyperlipidaemia have been released at the winter meeting of the Nutrition Society (4–5 December 2018, London). Eighty patients were divided into 3 groups: Nigella seeds (3 g/day), Nigella seed powder (3 g/day) or controls (no herb). Nigella was taken for 3 months. There are no details regarding changes to the diet or physical activity of

Trial Details	Dosage	Results	Ref
pilot, randomised, placebo-controlled, double-blind (Pakistan; n = 73); patients with hypercholesterolaemia[1a]	powdered seed: 2 g/day for 6 weeks	• favourable improvement on several lipids was found for the herb group compared to placebo but did not reach statistical significance	23
randomised, placebo-controlled (Iran; n = 74); patients with hyperlipidaemia[1b]	powdered seed: 2 g/day for 4 weeks	• significant decrease from baseline for the herb group for total cholesterol, LDL-cholesterol, triglycerides - total cholesterol: 6.08 to 5.79 mmol/L (-4.8%)* - LDL-cholesterol: 3.74 to 3.45 mmol/L (-7.7%)* - triglycerides: 1.99 to 1.64 mmol/L (-16.7%)* • no significant reduction in placebo group	21
placebo-controlled, single-blind (Pakistan; n = 60); patients with hyperlipidaemia[1c]	seed: 2 teaspoons per day for 4 weeks	• HDL-cholesterol level improved significantly from baseline for the herb group • no change in those receiving placebo	30
single-blind, controlled (placebo, Nigella, niacin**; Pakistan; n = 85); patients with hyperlipidaemia[1d]	seed: 4 g/day for 6 weeks	• LDL-cholesterol and HDL-cholesterol levels improved significantly from baseline for both herb and niacin groups • no significant effect in those receiving placebo	31,32
single-blind, controlled (placebo, Nigella, fenofibrate; Pakistan; n = 75); patients with hyperlipidaemia[1e]	powdered seed: 4 g/day for 8 weeks	• significant improvement from baseline for the herb group for all lipids • similar and significant improvement from baseline for all lipids for the drug group, with a greater increase in HDL-cholesterol • no significant effect in those receiving placebo	33
controlled (Nigella + statin vs statin; Pakistan; n = 80); patients with stable coronary artery disease[1c]	powdered seed: 0.5 g/day for 6 months	• significant results for herb + drug group at 6 months for all lipids from baseline - total cholesterol: 4.94 to 4.22 mmol/L (-14.6%)^ - LDL-cholesterol: 2.92 to 2.24 mmol/L (-23.0%)^ - VLDL-cholesterol: 1.01 to 0.85 mmol/L (-15.2%)^ - HDL-cholesterol: 1.06 to 1.09 mmol/L (3.2%)^ - triglycerides: 2.21 to 1.88 mmol/L (-15.2%)^ • only significant improvement in the drug group was an increase in HDL-cholesterol • herb group had higher baseline values	34

Table 3. Lipid-lowering effect of Nigella seed in controlled studies involving patients with high blood levels of lipids.

Notes: 1a: diet and lifestyle changes were recommended; 1b: participants continued usual diet and physical activity; 1c: diet and lifestyle not mentioned; 1d: Nigella and niacin groups followed low-fat diet and 40 minutes of brisk walking (frequency not mentioned), and presumably placebo group did also; 1e: recommended to walk briskly for 20 minutes twice daily **Symbols:** * $p < 0.001$; ^ $p < 0.05$; ** 2 g/day (divided into 3 doses)

participants over the course of the study, and it is not known if all the lipid levels were comparable (not statistically different) at baseline e.g. total cholesterol was 10.8% lower in the Nigella powder group compared to the control group. All lipids were significantly improved from baseline values by the action of Nigella, whereas there were no significant changes in the control group. The improvements were however, significantly greater ($p < 0.05$) in those consuming seed compared to powder e.g. total cholesterol (-25.2% vs -15.7%, respectively), HDL-cholesterol (33.3% vs 16.7%, respectively).[35]

Lipid-lowering activity has been investigated in menopausal women and patients with polycystic ovarian syndrome and Hashimoto's thyroiditis (*see relevant sections below*).

A small, placebo-controlled trial conducted in France with healthy men found no significant changes on serum lipids after treatment with Nigella seed (1 g/day) for 4 weeks, and no significant difference between the two groups. However, in the herb group, there was a significant correlation between the change in total cholesterol and its baseline level (n = 13), and between the change in LDL-cholesterol after treatment and its baseline level (n = 13). No correlation was found in the placebo group. The mean age of the participants was 23 years, and mean baseline levels were 4.4 mmol/L (total cholesterol), 2.6 mmol/L (LDL-cholesterol) and 0.9 mmol/L (triglycerides).[22]

In a small trial with sedentary, overweight women, supplementation with Nigella powdered seed (2 g/day) combined with aerobic training for 8 weeks significantly lowered LDL-cholesterol and increased HDL-cholesterol in comparison with those taking placebo and undergoing aerobic training. Other lipids were not significantly altered compared to placebo. The main criterion for entry into the trial was a total cholesterol level of more than 5.2 mmol/L. Participants were asked to not change their usual diet and physical activity (other than the aerobic training).[36]

Participants & Dose	Systolic BP (mmHg): Change from baseline			Diastolic BP (mmHg): Change from baseline			Ref
	Nigella	Placebo	Difference	Nigella	Placebo	Difference	
men with central obesity; 1.5 g/day for 12 weeks	-8.95	2.50	-11.45	-1.06	2.00	-3.06	20
metabolic syndrome;§† 0.5 g/day† for 8 weeks	-35.93	-32.37	-3.56	-7.18	-3.90	-3.27	37
metabolic syndrome;* 1.5 g/day for 8 weeks	-5.30	0.00	-5.30	-3.70	2.00	-5.70	25
healthy adolescents; 0.5 g/day for 4 weeks	0.40	0.34	0.06	-0.38	-0.21	-0.17	38

Table 4. Effect of Nigella seed on blood pressure in selected randomised controlled trials (baseline systolic BP > 130 mmHg).

Notes: § recently diagnosed, all patients taking amlodipine, atenolol, atorvastatin and low-dose aspirin † Although the publication refers to Nigella oil, the preparation was described: "*N. sativa* seeds were authenticated. Then the seeds were washed, dried and crushed to a powder with an electric microniser. Five hundred milligram capsules were made by this powder." **Symbols:** * recently diagnosed, not drug medicated

Hypotensive Activity

A meta-analysis gathered data from randomised controlled trials published before 30th August 2015 to quantify the effect of Nigella seed on blood pressure. The results of 8 trials were pooled. Significant effects were observed from administration of Nigella seed, with weighted mean differences of -3.57 mmHg and -2.23 mmHg for systolic blood pressure and diastolic blood pressure, respectively. The trials covered a diverse group of patients with varying baseline blood pressures, and yielded a range of results. Doses ranged from 0.5 to 2 g/day. Trials of participants with baseline systolic blood pressures above 130 mmHg are *outlined in Table 4* – note the high response in the control group of the second trial.[39]

A randomised, placebo-controlled trial published after this meta-analysis found there was no significant effect on blood pressure in elderly patients who had a baseline systolic blood pressure of 160 mmHg. The trial, conducted in Indonesia, prescribed 600 mg/day of an undefined *Nigella sativa* extract.[40]

Allergic Rhinitis & Asthma

Nigella seed (250 mg/day) taken for 15 days **reduced symptom severity scores** of allergic rhinitis in 20 patients. Pulse rate and body temperature also decreased.[41] In controlled trials by the same authors, Nigella seed, at the same dose, had similar benefit to cetirizine (second generation antihistamine) and montelukast (leukotriene receptor antagonist) in relieving the symptoms of allergic rhinitis.[42,43]

Symptoms improved and polymorphonuclear leukocyte functions (phagocytic and intracellular killing activities) significantly increased after treatment with Nigella seed (2 g/day) for 30 days. The combination of the herb and allergen-specific (dust mite) immunotherapy produced greater results than immunotherapy alone in patients with allergic rhinitis. Administration of Nigella seed alone increased the polymorphonuclear leukocyte functions from baseline values in healthy volunteers.[44]

Nigella has been clinically evaluated in asthmatic patients, but many of these studies have used oil,[45,46] a highly concentrated seed extract,[47,48] or seed in combination with honey.[49]

A randomised, placebo-controlled trial conducted in a university hospital in eastern Saudi Arabia, investigated the effect of two doses of Nigella seed on pulmonary function and inflammation in adults with partly-controlled asthma (as defined by the Global Initiative for Asthma guidelines). Placebo or Nigella (1 or 2 g/day, powdered seed) were taken for 12 weeks in addition to maintenance inhaler (mostly budesonide, in some cases fluticasone). Seventy-six patients completed the study. Some **measures of pulmonary function were improved** by use of Nigella, while treatment with placebo had no significant effect. The degree of control of asthma symptoms was assessed using the Asthma Control Test (ACT).[50]

- Forced expiratory flow (FEF25-75%) and the predicted value of forced expiratory volume at one second (FEV1 (% predicted)) increased significantly at both 6 and 12 weeks in the 2-g/day Nigella group. Variability of PEF (peak expiratory flow) significantly improved in both Nigella groups at 12 weeks, and at 6 weeks in the 1-g/day Nigella group. The improvement in PEF variability at 12 weeks by both Nigella doses was significantly higher than the change recorded for the placebo group.
- Fractional exhaled nitric oxide (FeNO) decreased significantly after 12 weeks of treatment with 1 g/day of Nigella. (FeNO is used as a diagnostic marker and an indicator of the inflammatory reaction underlying asthma.)
- Serum immunoglobulin E decreased significantly from baseline after 12 weeks in the 2-g/day group.
- Both doses of Nigella produced a significant increase in serum interferon-gamma at 12 weeks from baseline values. There was no effect on serum levels of the interleukins (IL-4, IL-10, IL-17A) or eotaxin.
- ACT scores improved in all groups.
- The frequency of exacerbations in the 1-g/day group was significantly less than the placebo group.

- Some patients who had co-existing allergic rhinitis reported a marked improvement in allergic symptoms such as itching, runny nose, sneezing and nasal blockage.

A randomised trial was conducted in Indonesia with 31 children (4–14 years old) with mild asthma and who were allergic to house dust mite (determined by skin prick test).[51-53] The participants received house dust mite specific immunotherapy in addition to: placebo (rice starch), Nigella powder (15 mg/kg/day), a probiotic or a combination of Nigella and probiotic for 14 weeks. ACT scores were significantly decreased after treatment in those receiving Nigella (29.7%), probiotic (33.3%) and Nigella + probiotic (33.3%). The improvement in the placebo group (13.5%) was not significant.

Effect on Thyroid & Liver

Forty patients with Hashimoto's thyroiditis, aged between 22 and 50 years, were randomly allocated to two groups, receiving Nigella powdered seed (2 g/day) or placebo for 8 weeks. Baseline values were similar between the groups, with the exception of T3 (triiodothyronine) levels, which were significantly lower in those receiving Nigella. Dietary energy and nutrient intakes (carbohydrate, protein, fat, vitamins C and E) did not significantly change during the study. Patients were treated with levothyroxine from 6 weeks prior to, and throughout the trial, without changes to the dosage. The average dose of levothyroxine sodium was approximately 1.7 mcg/kg/day (about 120 mcg/day for these patients (~70 kg in weight)). Treatment with Nigella had a **favourable effect on levels of thyroid stimulating hormone** (TSH) and anti-thyroid peroxidase (anti-TPO). Nigella did not significantly improve T4 (thyroxine) levels. Triglycerides, LDL-cholesterol and HDL-cholesterol were significantly improved under the action of the herb. No significant effects were observed in those taking placebo. *More information provided below*.[54,55]

	Baseline	After Herb Treatment
TSH (mIU/L)	6.42	4.13 ^
anti-TPO (IU/mL)	294.55	147.99 †
LDL-cholesterol (mmol/L)	3.38	2.79 §
triglycerides (mmol/L)	2.00	1.76 ^
HDL-cholesterol (mmol/L)	1.07	1.13 ^

^ $p < 0.05$; † $p = 0.019$ § $p = 0.002$

Seventy patients with **non-alcoholic fatty liver disease** (NAFLD) were randomly assigned to receive capsules of Nigella seed (2 g/day) or placebo for 3 months. The trial was conducted in Pakistan and all patients completed the study. There were no significant differences between the two groups at baseline for body weight, body mass index (BMI), levels of aminotransferases, and fatty liver grading on ultrasound, however, serum triglycerides were significantly higher, and fasting blood sugar levels were lower in the placebo group. Patients were advised to maintain their usual diet and exercise levels.[56]

- There was a marked decrease in the level of aminotransferases for those receiving Nigella (*see results below*). Changes to GGT (gamma-glutamyl transferase) were not significant.
- Overall, 57.14% of patients had normal fatty liver grading determined by abdominal ultrasound after treatment with Nigella, compared to 5.71% of the placebo group ($p = 0.002$).
- Four patients in the herb group and 2 patients in placebo group experienced headache and abdominal distress during the first week. These effects settled down and did not require intervention.

	Nigella		Placebo	
	Baseline	3 months	Baseline	3 months
ALT (IU/L)	78.05	52.60	76.48	74.32
AST (IU/L)	65.54	44.56	63.25	59.43

ALT: alanine aminotransferase; AST: aspartate aminotransferase; results significant for both enzymes for herb compared to placebo ($p < 0.05$), presumably this refers to the difference between the groups for the change from baseline

Preliminary results are available from a recent randomised, double-blind trial conducted in Iran. All patients were advised about lifestyle modification, and received Nigella seed powder (2 g/day) or starch as placebo, for 12 weeks. Dietary intake and physical activity were recorded at the beginning and end of the study. Forty-one patients with NAFLD completed the study. Steatosis was significantly reduced in the Nigella group compared to placebo ($p < 0.05$), although liver enzymes were unchanged.[57]

Dysmenorrhoea, PCOS

Nigella was compared with the non-steroidal anti-inflammatory drug mefenamic acid for the treatment of moderate to severe primary dysmenorrhoea in a randomised, double-blind trial conducted in Iran. Seventy university students aged between 18 and 30 years were enrolled and completed the study. Participants took identical-looking capsules for the first 3 days of menstruation for 2 consecutive cycles: Nigella powdered seed (3 g/day) or 750 mg/day of mefenamic acid. A questionnaire about the severity and duration of menstrual pain and frequency of systemic symptoms was completed. Pain severity was rated on a visual analogue scale (VAS; 1–10), with the scores 1–3, 4–7 and 8–10 denoting mild, moderate and severe pain. Duration of pain was measured using the Cox menstrual symptom scale (CMSS; 0–4, with 0 for no pain, 1: pain shorter than 0.5 hour, 2: pain lasting 0.5–1 hour, 3: pain lasting for a few hours, and 4: pain lasting for a few days). During the first and second cycles, the mean **severity and duration of pain were significantly lower in the Nigella group** than in the

mefenamic acid group (*more details below*). There was also significant improvement in fatigue and mood swings in those receiving the herb.[58]

	Baseline	After Treatment (2nd cycle)
Severity of Pain (VAS)		
Nigella	7.31	1.50
mefenamic acid	7.85	1.91
Duration of Pain (CMSS)		
Nigella	3.34	1.11
mefenamic acid	3.45	1.46

An earlier, controlled study conducted in India found that treatment with Nigella relieved symptoms in women with primary dysmenorrhoea. Nigella was almost as effective as the standard drug combination paracetamol and ibuprofen. Patients were randomly divided into two groups of 30 patients each and were treated for 3 consecutive cycles with: Nigella powdered seed (4 g/day) for 7 days starting 2 days before the onset of menstruation or 325 mg of paracetamol and 400 mg ibuprofen, once a day from beginning of menstruation for 7 days. After treatment, relief of pain in the suprapubic region was found in 53.3% and 63.3% of patients for the herb and drug groups, respectively. Similarly, relief of pain in the thigh, head and back occurred for 73.3%, 83.3% and 39.1% of patients treated with the herb and for 66.7%, 100% and 78.3% of patients treated with the drug combination.[59]

Ten women with polycystic ovarian syndrome (PCOS) completed a 16-week, uncontrolled, pilot study conducted in Iran. Half of the women had oligomenorrhoea, the other half, amenorrhoea. Treatment with Nigella significantly increased the median duration of menstrual cycle from 3 to 5.5 days ($p = 0.02$) and the number of menstrual cycles per month (0.3 to 0.5). The median **interval of menstrual cycle significantly decreased** from 90 to 45 days ($p = 0.005$). Levels of luteinizing hormone, total cholesterol, triglycerides, glucose, insulin and AST were also significantly decreased. Potential changes to diet and lifestyle were not discussed. Nigella was administered in capsules. Seeds were soaked in grape vinegar for 24 hours, dried and powdered. Each capsule contained 0.5 g of powder, and 4 capsules were taken each day.[60] Nigella seed processed with vinegar is a traditional Iranian preparation, and has a slightly different phytochemical profile: similar fatty acid composition of the fixed oil, but some alterations of the proportions of constituents in the volatile oil, for example, lower thymoquinone content.[10,11]

Menopause

A crossover study conducted in Malaysia, enrolled 69 perimenopausal and menopausal women with climacteric symptoms. After taking Nigella for 12 weeks, and following a 2-week washout period, participants were assigned to take a placebo (calcium) for another 3 months. The herb product was described as "pure powdered *N. sativa*", and taken at a dosage of 1.6 g/day. Menopausal symptoms were evaluated with the Greene Climacteric Scale (GCS), and general quality of life with the standard SF-36 short-form health survey. The mean age of the participants was 50.1 years. Fifty-five women completed the study.[61]

- Treatment with the herb induced a **significant reduction of prevalence and severity of menopausal symptoms**. The total score of GCS, as well as the psychological, anxiety, depression, somatic and vasomotor scores decreased significantly from baseline ($p < 0.05$). No significant changes occurred during the placebo period. The results for total score of GCS as well as the psychological and anxiety scores were significantly different from placebo.
- In regard to the SF-36 Index, treatment with Nigella significantly ($p < 0.05$) improved 4 of the 8 domains: social function, role-emotional (role limitations due to emotional problems), vitality and mental component summary, from baseline i.e. Nigella improved quality of life relating to social and emotional health. Comparison with the placebo phase indicated Nigella had a beneficial effect on general health, role-emotional, vitality, mental health and mental component summary.
- Although treatment with Nigella significantly improved levels of total cholesterol and HDL-cholesterol and blood pressure from baseline, the only significant improvement compared to the placebo phase was for LDL-cholesterol. (The participants were not taking hypolipidaemic, antidiabetic or hypotensive medications, although there was no mention of diet and exercise. Baseline levels of total cholesterol and LDL-cholesterol were borderline high and high, respectively.)

A randomised, double-blind, placebo-controlled study was performed with 46 Iranian women aged between 40 and 60 years experiencing an average of more than 4 hot flushes per day. All women were also treated with the selective serotonin reuptake inhibitor citalopram. The herbal group were treated with a combination of Nigella (0.5 g/day of powdered fresh seed) and Chaste Tree (*Vitex agnus-castus*, 1 g/day of dried fruit). The herb and placebo capsules looked identical. Capsules were taken for 8 weeks. The Menopause-Specific Quality of Life (MENQOL) questionnaire was used to assess menopause-specific quality of life.[62]

- Mean MENQOL scores for the herb combination group improved significantly compared to the placebo group for the domains of vasomotor, physical and psychosocial. The baseline vasomotor score was much higher in the herb group (almost significantly higher, $p = 0.052$), so the improvement in this domain

compared to placebo was quite marked (28.7% vs 2.0%, respectively).
- Although the sexual score improved from baseline for those receiving Nigella and Chaste Tree, this was not significant compared to the placebo results.

Mood & Cognitive Function

Two randomised, placebo-controlled trials have been conducted in Bangladesh with healthy volunteers. Powdered Nigella seed or psyllium husk was provided in hard-shell capsules. Treatment with Nigella (1 g/day) to elderly participants for 9 weeks significantly enhanced memory, attention and cognition from baseline values as assessed using a series of neuropsychological tests. There were no significant changes after intake of placebo. Forty volunteers completed the trial. They had an average age of about 56 years with an estimated IQ of about 106 (i.e. average).[63] Forty-eight male adolescents (14–17 years old) completed a 4-week trial, in which treatment with Nigella (0.5 g/day) had a significant positive influence on mood, reduced some measures of anxiety and produced superior performance on some memory tests. There was a statistical difference between the Nigella and placebo groups for these outcomes.[38]

Weight Loss

A reducing effect of Nigella on body weight or other anthropometric measures has not been consistently demonstrated, with no significant effect observed in a majority of studies that evaluated a variety of patient groups (diabetes, metabolic syndrome, unhealthy lipid levels, menopause, central obesity, NAFLD) with a range of baseline body mass indexes (27–34.5 kg/m^2).[20,23-25,27,28,30,36,56,61,64] In most of these studies, body composition was not the primary outcome, and diet and exercise levels were usually not controlled. The one trial that confirmed diet and physical activity did not significantly change over the duration of study (12 weeks), found a significant reduction in waist circumference for those consuming Nigella powdered seed (3 g/day) compared to the control group (corn starch). The trial, conducted in the United Arab Emirates, enrolled 51 participants at risk of developing metabolic syndrome (having 3 of the 5 risk factors). Average baseline values for BMI and body weight of the treatment and control groups were 34.8 and 34.0 kg/m^2, 92.7 and 93.8 kg, respectively. The **improvements in weight, waist circumference and percent body fat** for the Nigella group were statistically significant compared to the changes experienced by the control group. For example, weight decreased by 0.7 kg after consuming Nigella for 12 weeks, compared to an increase of 1.95 kg for the controls ($p < 0.01$).[28]

Treatment with Nigella seed powder (2 g/day, for 8 weeks) significantly reduced body weight and BMI in patients with Hashimoto's thyroiditis who were taking levothyroxine. Average baseline values for BMI and weight of the Nigella group were 27.1 kg/m^2 and 70.5 kg, and the reduction was about 1.6% for both parameters. Weight and BMI were unchanged in the placebo group. Dietary energy and nutrient intakes were similar at baseline and no significant change was observed at the completion.[54,55]

Cancer

In Egypt, researchers investigated the ability of Nigella seed to **prevent febrile neutropaenia** occurring in children receiving chemotherapy. Eighty children (2–18 years old) with various forms of primary brain tumours were randomised into 2 groups: Nigella and control. A daily dose of 5 g of seeds, whole or ground were added by the mother to the child's diet during their entire chemotherapy treatment (until recovery from the last chemotherapy cycle). If given whole, the children were asked to chew the seeds. (This is a high to very high dose.) The control group continued their normal diet. There were no statistical differences between the two groups for the weights of children of different age groups. Ninety-five percent of children took Nigella for 3–9 consecutive months (average of 6 months).[65]
- The Nigella group experienced fewer febrile neutropaenia episodes compared to the control group (2.2% vs 19.3%; $p = 0.001$).
- The duration of hospital stay during these episodes was shorter in the Nigella group compared to the control group who were hospitalised for longer periods (8 vs 63 days; $p = 0.006$). The median length of hospital stay was 2.5 days in those treated with Nigella compared to 5 days for the control group.
- Loss of weight in the Nigella group was less severe than experienced by the control group.

An earlier, preliminary study included Nigella seed in the treatment of children (2–18 years old) with acute lymphoblastic leukaemia (ALL). This study was conducted in Pakistan and patients were randomly divided into 3 groups: group I received conventional chemotherapy, group II received conventional chemotherapy plus L-asparaginase (for additional cytotoxic activity), group III received conventional chemotherapy and Nigella powdered seed (40 mg/kg/day). This induction treatment was due to last for 3 months, and then maintenance therapy followed. The researchers were investigating whether Nigella seed could replace L-asparaginase in treatment of this condition. All patients who completed treatment achieved complete remission (i.e. similar efficacy across all groups). Group III was described as the best treatment due to similar beneficial therapeutic effect and low incidence of side effects (one in group I, 32 in group II, none in group III (Nigella)).[66]

Other Activity

In addition, Nigella seed:

- significantly **improved sperm count**, viability, motility and morphology as well as hormone levels in infertile men (2 g/day, for 3 months);[67]
- at a dosage of 2 g/day and combined with omeprazole, produced a statistically comparable, although lower, eradication of ***Helicobacter pylori* infection** in patients with non-ulcer dyspepsia as treatment with triple drug therapy (omeprazole + 2 antibiotics); the effect was not dose-dependent: dosage of 1 g/day and 3 g/day had lower efficacy;[68]
- demonstrated some activity against **cestode infestation** in children under the age of 12 years (single dose: 40 mg/kg);[69]
- decreased the signs and symptoms of **opioid dependence** – patients had already been treated for acute opiate withdrawal syndrome (1.5 g/day, for 10 days);[70]
- significantly eliminated or reduced the size of early-formed (small) **kidney stones** (1 g/day, for 10 weeks);[71]
- significantly **increased appetite** in healthy normal-weight volunteers (BMI: 20.45 mg/m^2; 1, 2, 3 g/day, taken for 3 weeks; effect not dose-dependent).[72]

A controlled study in Iraq found good clinical response in 50% of the 20 patients with **psoriasis** who were treated with Nigella seed (1.5 g/day) for 12 weeks. The relapse rate 4 weeks after cessation of treatment was 50%. There were another two groups of 20 patients who were treated with an ointment of the fixed oil of Nigella seed, or a combination of oral seed and ointment. Better results were found for those treated with the ointment and for those who received the combination.[73] Patients with occupational contact dermatitis participated in a clinical study conducted in Egypt. Groups of 10 patients received Nigella capsules (powdered seed: 0.8 g/day, not to be taken on an empty stomach), one of two ointments, capsules of placebo powder or placebo ointment. Duration of treatment was 2 weeks. All of the patients treated with Nigella seed capsules experienced improvement or complete recovery (i.e. 100%) compared to 50% of those treated with placebo capsules. Complete recovery occurred in 89%, 63% and 46% of those treated with the two Nigella ointments and Nigella capsule, respectively. Natural killer cell counts were significantly increased from baseline for all Nigella groups.[74]

Early results suggest that treatment with oral *Nigella sativa* powder (2 g/day, added to food or beverages) is a promising treatment for beta-thalassaemia major. Twenty-five blood transfusion-dependent children (6–18 years old) underwent the treatment for 3 months. Nigella significantly increased blood haemoglobin, white blood cell count and enhanced cell-mediated immunity from baseline values. The beneficial effect may be, at least partly, due to antioxidant activity as serum MDA (malondialdehyde) significantly decreased. Serum ferritin was unchanged.[75]

Oxytocin levels significantly increased in postpartum mothers after being given a combination of Nigella (1.2 g/day; undefined but probably seed) and lactation massage (of the breast and back region) for 14 days. The increase from baseline was 30.43 ng/mL (increase of 63.8%) compared to an increase of 6.72 ng/mL in the control group who received breast care and education.[76] Confirmation of these results with investigation of other clinical parameters is desirable.

Safety

Nigella seed and its constituents have low toxicity, particularly at therapeutic doses.[77,78]

Mild gastrointestinal discomfort can occur occasionally, and it may be best taken after meals.[79] For example, in the Saudi Arabian clinical study[12,26,80] that evaluated several doses (1, 2 or 3 g/day in capsules for 12 weeks) in diabetics, Nigella seed was generally well tolerated with only 3 patients experiencing mild epigastric discomfort that settled down after taking the capsules after meals. Ninety-four patients were initially enrolled in the study, 23 were excluded (dropped out) for several reasons (e.g. lack of dosage compliance, change of diabetic medication, lost to follow up) and results were available for differing patient numbers depending on the variable measured (e.g. at baseline: n = 64 for fasting blood glucose, n = 65 for total cholesterol, n = 46 for HDL-cholesterol).[12,26] None of the patients dropped out because of side effects caused by Nigella,[26] although some of the patients in the 3-g dose group changed to the 2-g dose group in the last 4 weeks of treatment.[12]

The effect on haemoglobin has also been reported for these diabetic patients, with the authors issuing a caution for Nigella when given to those with anaemia. This publication indicates additional patients were lost to follow up. Baseline values for haemoglobin were recorded for 60 patients, with only 54 patients continuing to week 12. Although haemoglobin levels decreased significantly from baseline (e.g. by week 12: -2.9%, -2.4% and -4.9% for 1, 2 and 3 g/day, respectively) they remained within the normal range (above 13 g/dL, with one instance of 12.85 g/dL (week 12, 3 g/day)). A dose-dependent effect was suggested as a significant difference ($p < 0.05$) was observed at week 4 between the 3-g/day dose group and those who received 1 g/day (from baseline: -0.2% and -3.1% for 1 and 3 g/day, respectively), although the significant effect was not maintained through weeks 8 and 12.[80] In terms of lowering haemoglobin, information is available from two other studies. There was no significant effect on haemoglobin in 10 patients with contact dermatitis treated for 2 weeks with Nigella powdered

seed (0.8 g/day).[74] In children with brain tumours receiving chemotherapy and a high dose of Nigella, "there was a decline in haemoglobin levels" (no more information available), although there was no significant difference between the herb group and the control group regarding the incidence of anaemia. (*This controlled trial is outlined in the Cancer section above*.)[65] More information is needed as these results are inconclusive, however, in the meantime, it may be advisable to monitor haemoglobin levels in vulnerable groups (beta-thalassaemia patients excluded).

In the above trial with diabetics,[80] there was no effect observed on prothrombin time or platelet count. Partial prothrombin time was significantly increased at week 12 for the 2-g/day dose group, but the increase was not significant for the other doses. Fibrinogen levels increased significantly from baseline for the higher doses at weeks 8 and 12 (2 g/day) and week 12 (3 g/day). These preliminary results with potentially conflicting effects on thrombosis need verification.

A case of allergic reaction from oral intake of Nigella seed has been reported. It is likely that the patient was initially sensitised through regular local application of Nigella oil, and that oral intake of the seeds subsequently triggered a generalised eruption. Seven cases of allergy to Nigella oil have previously been reported: most were local reactions, but severe systemic reactions also occurred.[81]

As there are traditional references to Nigella seed causing terminations when given in high doses, it is contraindicated in pregnancy.[1,2,82] In terms of making a recommendation to women wishing to conceive, the research from animal studies is conflicting: an antifertility effect (preventing pregnancy), has been demonstrated[82,83] although not at lower doses,[84] and one study found an increase in reproductive performance (increased quality of embryos, increased offspring number and weight) when the diet contained 5% Nigella seeds (i.e. a high dose).[85] In this situation, it may be best to avoid therapeutic doses of Nigella seed (i.e. higher than dietary intake).

Actions

Digestive stimulant, carminative, diaphoretic, anthelmintic, emmenagogue, diuretic, expectorant, galactagogue, hypoglycaemic, possibly hypolipidaemic (and traditionally supports fat metabolism).

Indications

- Adjunct in treatment of diabetes, metabolic syndrome and hyperlipidaemia.
- Dyspepsia, poor appetite, flatulent colic, diarrhoea; gastrointestinal infections and worm infestation.
- Allergic rhinitis, fever, colds.
- Dysmenorrhoea, menopause.
- Adjunct in treatment of polycystic ovarian syndrome, male infertility.
- Conditions of low thyroid function and poor liver function.

REFERENCES

[1] Pole S. *Ayurvedic Medicine: The Principles of Traditional Practice*. Singing Dragon, London, 2013.
[2] Nadkarni A. *Dr K.M. Nadkarni's Indian Materia Medica*. 3rd Edn. First published 1954, reprinted Popular Prakashan, Bombay, India, 1976.
[3] Abu-Irmaileh BE, Afifi FU. *J Ethnopharmacol* 2003; **89**(2-3): 193-197
[4] Tahraoui A, El-Hilaly J, Israili ZH et al. *J Ethnopharmacol* 2007; **110**(1): 105-117
[5] Zaid H, Silbermann M, Ben-Arye E et al. *Evid Based Complement Alternat Med* 2012; **2012**: 349040
[6] Hooper D. *Bull Misc Inform Kew* 1931; **1931**(6): 299-344
[7] Liu X, Abd El-Aty AM, Shim JH. *Mini Rev Med Chem* 2011; **11**(11): 947-955
[8] Burits M, Bucar F. *Phytother Res* 2000; **14**(5): 323-328
[9] Zawirska-Wojtasiak R, Mildner-Szkudlarz S, Wasowicz E et al. *Herba Polonica* 2010; **56**(4): 20-30
[10] Ghourchian A, Hajimehdipoor H, Ara L et al. *Biol Forum* 2016; **8**(2): 120-125
[11] Hajimehdipoor H, Choopani R, Ara L et al. *Res J Pharmacogn* 2018; **5**(4): 9-13
[12] Bamosa A, Kaatabi H, Lebda F et al. *Indian J Physiol Pharmacol* 2010; **54**(4): 344-354
[13] Kaatabi H, Bamosa AO, Badar A et al. *PLoS One* 2015; **10**(2): e0113486
[14] Bilal A, Masud T, Uppal AM. *Diabetes Res Clin Pract* 2008; **79**(Suppl 1): S19-S20
[15] Bilal A. Thesis: *Effects Of Different Preparations Of Nigella Sativa (NS) On Glucose And Lipid Metabolism In Type II Diabetic Patients* [PhD]. PMAS-Arid Agriculture University, Rawalpindi, 2008.
[16] Jafri SA, Rehman KU, Qasim M et al. *J Biotechnol Res* 2016; **2**(7): 55-58
[17] Shaafi SM, Kulkarni H. *SSRG IJMS* 2017; **4**(3): 37-42
[18] El-Shamy K, Mosa M, El-Nabarawy S et al. *J Appl Sci Res* 2011; **7**(12): 2524-2534
[19] Ahmed M, El-Shamy K, El-Nabarawy S et al. *J Appl Sci Res* 2012; **8**: 5897-5902
[20] Datau EA, Wardhana, Surachmanto EE et al. *Acta Med Indones* 2010; **42**(3): 130-134
[21] Sabzghabaee AM, Dianatkhah M, Sarrafzadegan N et al. *Med Arch* 2012; **66**(3): 198-200
[22] Pelegrin S, Galtier F, Chalancon A et al. *Br J Clin Pharmacol* 2019: [Ahead of Print]
[23] Qidwai W, Hamza HB, Qureshi R et al. *J Altern Complement Med* 2009; **15**(6): 639-644
[24] Shah AS, Khan GM, Badshah A et al. *African J Biotechnol* 2012; **11**(48): 10919-10925
[25] Amin F, Islam N, Anila N et al. *Complement Ther Med* 2015; **23**(2): 165-174
[26] Kaatabi H, Bamosa AO, Lebda FM et al. *J Family Community Med* 2012; **19**(3): 155-161
[27] Badar A, Kaatabi H, Bamosa A et al. *Ann Saudi Med* 2017; **37**(1): 56-63
[28] Al Dhaheri A. *Dubai Nutrition Conference*. Dubai, 17-19 November 2016.
[29] Ibrahim R, Hamdan N, Mahmud R et al. *J Transl Med* 2014; **12**: 82
[30] Fatima A, Shad MN, Asrar A. *Pak J Med Health Sci* 2014; **8**(1): 122-124
[31] Niaz K, Qudoos A, Hakro S et al. *Foundation Uni Med J* 2018; **3**(1): 12-16

[32] Moeen-ud-din H, Murad S, Fatima A. *Pak J Med Health Sci* 2014; **8**(2): 306-309
[33] Mastoi SM, Ali A, Aslam H et al. *Univ J Pharm Res* 2017; **2**(6): 50-52
[34] Tasawar Z, Siraj Z, Ahmad N et al. *Pakistan J Nutr* 2011; **10**(2): 162-167
[35] Alamri E. *Proc Nutr Soc* 2019; **78**(OCE1): E12
[36] Farzaneh E, Nia FR, Mehrtash M et al. *Int J Prev Med* 2014; **5**(2): 210-216
[37] Najmi A, Nasiruddin M, Khan RA et al. *Asian J Pharm Clin Res* 2013; **6**(1): 61-64
[38] Bin Sayeed MS, Shams T, Fahim Hossain S et al. *J Ethnopharmacol* 2014; **152**(1): 156-162
[39] Sahebkar A, Soranna D, Liu X et al. *J Hypertens* 2016; **34**(11): 2127-2135
[40] Rizka A, Setiati S, Lydia A et al. *Acta Med Indones* 2017; **49**(4): 307-313
[41] Ansari MA, Ahmed SP, Haider S et al. *Pak J Pharm* 2006; **23**(2): 31-35
[42] Ansari MA, Ansari NA, Junejo SA. *Pak J Med Sci* 2010; **26**(2): 249-254
[43] Ansari M, Ahmed S, Ansari N. *Pak J Med Res* 2007; **46**(3): 58-62
[44] Isik H, Cevikbas A, Gurer US et al. *Med Princ Pract* 2010; **19**(3): 206-211
[45] Kalus U, Pruss A, Bystron J et al. *Phytother Res* 2003; **17**(10): 1209-1214
[46] Koshak A, Wei L, Koshak E et al. *Phytother Res* 2017; **31**(3): 403-409
[47] Boskabady MH, Javan H, Sajady M et al. *Fundam Clin Pharmacol* 2007; **21**(5): 559-566
[48] Boskabady MH, Mohsenpoor N, Takaloo L. *Phytomedicine* 2010; **17**(10): 707-713
[49] Ameen NMA, Altubaigy F, Jahangir T et al. *J Med Plants Res* 2011; **5**(31): 6857-6863
[50] Salem AM, Bamosa AO, Qutub HO et al. *Ann Saudi Med* 2017; **37**(1): 64-71
[51] Kardani AK, Fitri LE, Barlianto W et al. *IOSR J Dent Med Sci* 2013; **6**(4): 37-47
[52] Sugiono L, Nurdiana OE, Barlianto W et al. *IOSR J Dent Med Sci* 2013; **7**(3): 32-39
[53] Susanti N, Barlianto W, Kalim H et al. *IOSR J Dent Med Sci* 2013; **7**(3): 50-59
[54] Farhangi MA, Dehghan P, Tajmiri S. *Lipids Health Dis* 2018; **17**(1): 59
[55] Farhangi MA, Dehghan P, Tajmiri S et al. *BMC Complement Altern Med* 2016; **16**(1): 471
[56] Hussain M, Tunio AG, Arain LA et al. *J Ayub Med Coll Abbottabad* 2017; **29**(3): 403-407
[57] Darand M. *Third International Congress and 15th Iranian Nutrition Congress*. Tehran, Iran, December 19-21, 2018.
[58] Falahieh FM, Jafarnejad F, Rakhshandeh H et al. *Med Sci* 2019; **23**(96): 233-237
[59] Khan RM, Ahman W, Hasan A et al. *Hippocratic J Unani Med* 2016; **11**(2): 1-8
[60] Naeimi SA, Tansaz M, Sohrabvand F et al. *Int J Pharm Sci Res* 2018; **9**(11): 4716-4722
[61] Latiff LA, Parhizkar S, Dollah MA et al. *Iran J Basic Med Sci* 2014; **17**(12): 980-985
[62] Molaie M, Darvishi B, Jafari Azar Z et al. *Gynecol Endocrinol* 2019; **35**(1): 58-61
[63] Bin Sayeed MS, Asaduzzaman M, Morshed H et al. *J Ethnopharmacol* 2013; **148**(3): 780-786
[64] Ibrahim RM, Hamdan NS, Ismail M et al. *Adv Pharm Bull* 2014; **4**(1): 29-33
[65] Mousa HFM, Abd-El-Fatah NK, Darwish OA et al. *Childs Nerv Syst* 2017; **33**(5): 793-800
[66] Dogar M, Adnan H, Akhtar MS et al. *Pharmacologyonline* 2009; **2**: 769-777
[67] Marbat MM, abid Ali M, Hadi AM. *Tikret J Pharm Sci* 2013; **9**(1): 19-29
[68] Salem EM, Yar T, Bamosa AO et al. *Saudi J Gastroenterol* 2010; **16**(3): 207-214
[69] Akhtar MS, Riffat S. *J Pak Med Assoc* 1991; **41**(8): 185-187
[70] Sangi S, Ahmed SP, Channa MA et al. *J Ayub Med Coll Abbottabad* 2008; **20**(2): 118-124
[71] Ardakani Movaghati MR, Yousefi M, Saghebi SA et al. *Phytother Res* 2019: [Ahead of Print]
[72] Abed N, Boukebbous B, Felouat M et al. *Int J Pharma Chem Res* 2018; **4**(2): 131-135
[73] Ahmed JH, Ibraheem AY, Al-Hamdi KI. *J Clin Exp Invest* 2014; **5**(2): 186-193
[74] Saad A, Besher S, Ammar N et al. *Cent Eur J Occup Environ Med* 2001; **7**(1): 26-38
[75] El-Shanshory M, Hablas NM, Aboonq MS et al. *J Herb Med* 2018: [Ahead of Print]
[76] Windyarti MLNZ, Suwondo A, Pujiastuti RSE. *Int J Sci Res* 2018; **7**(8): 1571-1574
[77] Ali BH, Blunden G. *Phytother Res* 2003; **17**(4): 299-305
[78] Gholamnezhad Z, Havakhah S, Boskabady MH. *J Ethnopharmacol* 2016; **190**: 372-386
[79] Jaffar S, Chandrasekhar K, Padmanabha R et al. *IJOPP* 2013; **6**(2): 34-37
[80] Lebda FM, Bamosa AO, Kaatabi H et al. *Egypt J Haematol* 2012; **37**(2): 73-80
[81] Dehavay F, Kolivras A, Scheers C. *Contact Dermatitis* 2019; **80**(3): 176-177
[82] Keshri G, Singh MM, Lakshmi V et al. *Indian J Physiol Pharmacol* 1995; **39**(1): 59-62
[83] Velmurugan R, Jeganathan N. *Asian J Chem* 2007; **19**(6): 4936-4938
[84] Prakash AO, Mathur R. *Indian J Exp Biol* 1976; **14**(5): 623-626
[85] Mohammed A, Farghaly M. *Egypt J Anim Prod* 2018; **55**(3): 195-201

Author: Michelle Morgan
© Copyright 2019 MediHerb.