

An Experimental Study of Albino Rats Fed on Nigella Sativa and Aspirin for Four Weeks Duration: Determination of Coagulation Profile

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Ninety albino rats were selected and were divided into six groups on the basis of different diets given. Control group (I) was fed on synthetic diet and experimental groups (IIA, IIB, IIC, IID and IIE) were fed on 1 mg aspirin, 15mg, 30 mg, 45 mg Nigella Sativa per kg body weight respectively while IIE was given 30 mg NS and 1 mg aspirin/kg body wt. Blood samples were collected by heart puncture and Coagulation parameters were done. BT was prolonged in groups taking aspirin only. APTT was reduced significantly in groups taking different concentration of NS when compared with control. Percentage of clot retraction was weak significantly in groups taking aspirin only when comparing with other groups.

Key words: Aspirin, Nigella Sativa

Petroleum ether extracts produced significant shortening in the whole blood clotting times and activated partial thromboplastin time. No significant effect was shown on the prothrombin time and thrombin time¹. The fatty extract and petroleum ether inhibited the fibrinolytic activity in vivo and in vitro. The mechanism of this effect is not known but it may be due to an inhibitory effect on the activation of plasminogen or inhibiting the plasmin activity².

Nigella Sativa seeds have been shown to possess significant anthelmintic effect in young children⁽³⁾. Salomi et al (1992)⁴ reported that it had cytotoxic effect by administering in two patients with malignant ulcer on the face. It produces significant shortening of clotting, bleeding, thrombin, prothrombin and partial thromboplastin times in rats^{5,6,7}. Nigella Sativa has also been administered for the treatment of jaundice⁸.

Seeds of Nigella sativa are given with butter and milk to cure obstinate hiccup. Seeds are employed as a purgative. They are also useful in indigestion, loss of appetite, fever, diarrhea, and puerperal disease etc⁹. NS produced significant shortening in kaolin cephalin clotting time. Ether extracts and fatty extract produced a significant shortening in bleeding time⁵.

Nigella Sativa seeds are extensively used as medicine. The Hakeems prescribe it as diuretic, carminative and anthelmintic. It also considers to increase the menstrual blood flow and secretion of milk. The seed gives relief when bruised with vinegar and applied on pityriasis, Leucoderma, wring worm, eczema and alopecia. EI-Dakhkhany (1983)¹⁰ isolated a crystalline active principle from the essential oil of Nigella Sativa which later proved to be the dimmer of thymoquinone; he found that the carboxyl fraction isolated from the volatile oil was polythymoquinone and it possessed lower toxicity than thymoquinone itself.

Subjects and methods

Ninety male albino rats were divided into different groups on the basis of diet (Table 1). Blood sampling was done at

4th week. Special Haematological investigation (PT, APTT, BT, clot retraction and fibrinogen) were performed.

Table 1. Groups of animals based on diet

Groups	n=	Type of diet/rat twice a day
I (Control)	15	10gms (synthetic diet)
Experimental group (II)	75	
IIA	15	0.2 mg aspirin & 10g synthetic diet
IIB	15	3.0 mg Nigella Sativa & 10g synthetic diet
IIC	15	6.0 mg Nigella Sativa & 10g synthetic diet
IID	15	9.0 mg Nigella Sativa & 10g synthetic diet
IIE	15	0.2 mg aspirin + 3 mg Nigella sativa & 10g synthetic diet

Results

The results of different groups at 4th week are shown in Table 2 given in the end.

Discussion

Clot retraction

At 4th week when comparing control group with group taking a spirin only (IIA), there was decreased percentage of clot retraction and the difference was significant ($p < 0.05$) statistically. While comparison of groups IIA vs IIB, IIA vs IIC, IIA vs IID and IIA vs IIE showed increase percentage of clot retraction in groups taking different conc. of NS and the difference was significant ($p < 0.05$) statistically.

Bleeding Time

The mean \pm SD values of BT in experimental groups taking NS in different concentrations were shortened significantly ($p < 0.05$) when comparing with control group (I) at 4th week while prolonged significantly ($p < 0.05$) in group taking aspirin only at 4th week. This shortened BT in different groups may be due to the effects of Nigella sativa which may result in increased functional property of

platelets. Group taking aspirin only showed prolonged BT which is due to anti-platelet effect of aspirin present in this group. Such results are also seen in the study of Tocantins (1936)⁷ who also observed shortening of BT by using fatty and petroleum ether extracts of Nigella sativa.

Prothrombin Time

The mean±SD values of PT in experimental groups IIA, IIB, IIC IID & IIE were comparable with that of control groups.

Activated Partial Thromboplastin Time

The mean ± SD values of APTT in experimental groups taking NS only was significantly (p<0.05) decreased when comparing with control group (IA) at 4th week but comparable in groups taking aspirin at 4th week. This decreased APTT in groups taking Nigella sativa may be due to effect of NS on factors involved in the intrinsic coagulation pathway. Such results are in conformity with the study of Owen et al (1975)¹ & Ghoneum et al (1982)⁵ who also observed similar changes.

Fibrinogen Level

The mean±SD values of fibrinogen in experimental groups taking different concentration of NS and aspirin are comparable when comparing with control group (IA) at 4th week. The comparison between different experimental

groups to each other also showed non-significant difference statistically.

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Table 2. Specific haematological investigations in experimental and control groups at 4th week

Groups	Clot Retraction (%)	BT (Minute)	PT (Second)	APTT (Second)	Fibrinogen (mg/dl)
IA (Control)	55.2±3.34 (50-58)	3.5±0.49 (3.0-4.3)	12.6±1.44 (11-14)	34.8±2.16 (35-38)	231±66.4 (175-340)
IIA	51.2±2.0 (55-65)	5.2±1.29 (3.8-6.5)	12.4±1.14 (11-14)	33.6±1.67 (32-36)	255±45.2 (155-340)
IIB	54.0±4.0 (52-60)	2.8±0.26 (2.4-3.0)	12.6±1.14 (11-14)	28.6±1.94 (28-32)	170-7.90 (165-180)
IIC	57.4±4.0 (52-62)	2.8±0.3 (2.5-3.1)	12.2±1.3 (11-14)	39.6±2.6 (26-31)	246±81.13 (175-375)
IID	55.6±3.8 (50-60)	2.7±0.2 (2.5-3.0)	12.6±0.9 (11-14)	29.4±2.4 (26-32)	271±76.5 (180-375)
IIE	59.8±1.0 (58-61)	3.6±0.4 (3.2-4.2)	12.0±1.0 (11-13)	34.8±2.2 (32-38)	186±32.3 (155-230)
Statistical Analysis					
I vs IIA	S	S	NS	NS	NS
I vs IIB	NS	NS	NS	HS	NS
I vs IIC	NS	NS	NS	HS	NS
I vs IID	NS	NS	NS	HS	NS
I vs IIE	S	NS	NS	NS	NS