

LETTER TO THE EDITOR

EFFECT OF ALLIUM CEPA (ONION) ON IMMUNE RESPONSE IN RABBIT

Sir,

(Received on December 11, 1982)

Allium cepa ("Onion", "Piyaj"), the bulb of which is used in food, has been claimed to be a household remedy for fever, dropsy, dysentery, cholera, flatulence and insect bites (4,5). The juice of onion has been reported to be cardiac stimulant, smooth muscle stimulant and antibacterial (2). Its hypocholesterolemic, fibrinolytic and hypoglycemic effects have already been reported (6, 7, 11). The observations that a long term administration of aqueous extract of onion reduced the protein and lipid levels of blood (1) and that the onion extract has cytotoxic activity (10) prompted us to study the effect of onion on antibody formation as role of proteins in the synthesis of antibodies is well documented (9) and cytotoxic drugs are known to possess immunosuppressive action.

Healthy albino rabbits of either sex weighing between 1.5 and 2 kg and fed on rabbit's "Ani diet" and water *ad libitum* were employed. The animals were divided into four groups of five rabbits each which were balanced for sex and weight and treated as follows: Group I : Single dose of 1 ml typhoid "H" antigen (Kasauli Institute) was injected sc. and this group served as control. Group II : Animals were inoculated with typhoid antigen as in the group I and treated orally with 400 mg/kg of freshly crushed and homogenized bulb of onion, daily for 10 days starting from the day of antigenic stimulation. Onion was prepared as a 10% aqueous suspension, but no suspending agent was used. Group III : Animals were injected sc with 1 ml of 20% suspension of sheep erythrocytes (prepared in the laboratory) sc on alternate days; a total of three inoculations were made. This group served as control. Group IV : Animals were inoculated as in case of the group III and treated with onion as in case of group II starting from the first day of antigenic stimulation.

The antibody titre was estimated on 10th day in group I and II using Widal agglutination test for typhoid "H" antigen as described by Cruickshank (3) and sheep erythrocyte induced antibody formation was assessed in group III and IV on 10th day as described by Merchant and Packer (8)).

Analysis of the Table I reveals that orally administered onion extract significantly inhibited the antibody titre; the inhibition was 76.3% in case of typhoid "H" antigen and 78.3% in case of sheep erythrocyte.

TABLE I: Effect of *Allium cepa* (onion) on experimentally-induced immune response in rabbit.

Group	Treatment	Antibody titre	
		Range	Mean \pm SE
I	Typhoid "H" antigen only	320-960	512 \pm 128.0
II	Typhoid "H" antigen + onion (400 mg/kg, po) for 10 days	80-160	120 \pm 15.5 ^a
III	Sheep erythrocyte (20%) suspension only	80-240	184 \pm 35.5
IV	Sheep erythrocyte + onion (400 mg/kg, po) for 10 days	20-60	40 \pm 6.3 ^b

See text for details of antigenic stimulation and onion administration.

(a) Value differs significantly from group I ($P < 0.02$, t test).

(b) Value differs significantly from group III ($P < 0.01$, t test).

The study is suggestive of immunosuppressive activity in onion particularly involving humoral immunity and in view of the possible clinical significance, calls for further studies. It is possible that the observed effects of onion may be related to its reported catabolic action (9).

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