

**Table 2** Effects of cyanate and aspirin on levels of calcium and phosphate in plasma and lens of rat

	Plasma		Lens	
	Calcium (mg/100 ml)	Phosphate (mg/100 ml)	Calcium	Phosphate
Control (n=12)	10.27 ± 0.55	6.55 ± 0.31	0.60 ± 0.08	4.24 ± 0.21
Cyanate-treated (11)	14.95 ± 0.85	7.25 ± 0.29	0.92 ± 0.10	5.65 ± 0.24
Cyanate treated, fed aspirin (11)	8.01 ± 0.63	6.56 ± 0.71	0.66 ± 0.07	4.35 ± 0.20

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## PRECIPITATION REACTIONS OF LECTINS WITH SERUM SAMPLES OF PATIENTS WITH VARIOUS MALIGNANT DISORDERS

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LECTINS are soluble proteins that can bind non-covalently to specific carbohydrate groups without modifying them chemically. By virtue of this property, lectins are useful in topographical studies of a wide variety of biological cell membranes. Their application to the study of tumour cells is a rapidly developing facet of cancer research<sup>1-4</sup>; they not only agglutinate but also transform cells. Lectins also precipitate certain proteins. In the present study

an attempt has been made to distinguish between normal serum and serum of patients suffering from various malignant disorders by using different seed extracts. The seeds of many plants are known to contain lectins.

Extracts of 207 different seeds of plants belonging to 53 families were tested against serum samples of patients with history of various carcinomas or lymphoproliferative/haematologic disorders. Serum samples from normal healthy volunteer blood donors were used as controls. Seed extracts were prepared by a standard technique<sup>5</sup>. Each batch of lectin was standardized for protein concentration. Precipitation reactions were carried out by the Ouchterlony method<sup>6</sup>. The diffusion was carried out overnight at room temperature in a wet chamber.

Table 1 shows specific and non-specific precipitation activities in 26 seed extracts with serum samples of normal individuals and patients suffering from various carcinomas. It is interesting that normal serum samples vary from serum samples derived from various carcinoma patients. Seed extracts 1-4 gave non-specific precipitin bands; extracts 5 and 6 differentiated serum of patients with carcinoma of rectum from serum of normal individuals and patients with other malignant disorders; extracts 7-16 gave specific precipitation bands with serum from patients with carcinoma of gall bladder; 17 and 18 gave precipitin bands with serum of patients with carcinoma of stomach; 19 gave positive reaction with serum from patients suffering from malignancies of the ovary; 20 and 21 gave precipitation reaction with the serum of breast carcinoma patients; extracts 22-26 gave precipitin bands with serum from patients with carcinoma of scalp. No precipitation reaction was observed with serum from patients with carcinoma of larynx or broncheogenic carcinoma.

From the above results it is clear that serum of normal individuals can be differentiated from that of patients with various malignant disorders on the

**Table 1** Precipitation reactions of lectins with serum from normal individuals and patients with various carcinomas

Sl. no.	Plant	Carcinoma of rectum (n=5)	Carcinoma of gall bladder (n=5)	Carcinoma of stomach (n=5)	Malignancy of ovary (n=5)	Carcinoma of breast (n=5)	Carcinoma of scalp (n=5)	Carcinoma of larynx (n=5)	Bronchogenic carcinoma (n=5)	Normal (n=80)
<b>Non-specific precipitins</b>										
1.	<i>Quercus incana</i>	5	5	5	5	5	5	5	5	80
2.	<i>Tamarindus indica</i>	5	5	5	5	5	5	5	5	20
3.	<i>Terminalia chebula</i>	5	4	3	3	2	3	5	5	30
4.	<i>Ipomia pinnata</i>	5	3	3	2	1	4	5	3	45
<b>Specific positive precipitins</b>										
5.	<i>Bauhinia purpurea</i>	5	—	—	—	—	—	—	—	—
6.	<i>Eucalyptus resinifera</i>	5	—	—	—	—	—	—	—	—
7.	<i>Ipomea palmata</i>	—	5	—	—	—	—	—	—	—
8.	<i>Cicer arietinum</i> (Kabuli)	—	5	—	—	—	—	—	—	—
9.	<i>Medicago falcata</i>	—	4	—	—	—	—	—	—	—
10.	<i>Aesculus indica</i>	—	5	—	—	—	—	—	—	—
11.	<i>Albizia lucida</i>	—	3	—	—	—	—	—	—	—
12.	<i>Derris robusta</i>	—	3	—	—	—	—	—	—	—
13.	<i>Putranjiva roxburghii</i>	—	5	—	—	—	—	—	—	—
14.	<i>Centaurea moschata</i>	—	5	—	—	—	—	—	—	—
15.	<i>Gossypium indicum</i> (G-27)	—	3	—	—	—	—	—	—	—
16.	<i>Cicer arietinum</i> (F-378)	—	4	—	—	—	—	—	—	—
17.	<i>Acacia catechu</i>	—	—	5	—	—	—	—	—	—
18.	<i>Acacia tortalis</i>	—	—	5	—	—	—	—	—	—
19.	<i>Albizia amara</i>	—	—	—	5	—	—	—	—	—
20.	<i>Parkinsonia aculeata</i>	—	—	—	—	5	—	—	—	—
21.	<i>Trewia nudiflora</i>	—	—	—	—	5	—	—	—	—
22.	<i>Dalbergia sissoo</i>	—	—	—	—	—	5	—	—	—
23.	<i>Lagerstroemia flosreginae</i>	—	—	—	—	—	3	—	—	—
24.	<i>Strychnos nuxvomica</i>	—	—	—	—	—	5	—	—	—
25.	<i>Prosopis cineraria</i>	—	—	—	—	—	4	—	—	—
26.	<i>Acacia dealbata</i>	—	—	—	—	—	4	—	—	—

basis of a simple precipitation test. Our results highlight the use of lectins as a diagnostic tool for neoplastic diseases. It is possible that some of these specific +ve precipitating lectins may be of further help in detecting changes in serum proteins at early stages of malignancy even before the disease is clinically manifested.

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