TABLE I
R_f values of 46 common metal ions in methanol-50% HNO_3; 9 : 1 system

Cations	R_f	Cations	R_f	Cations	R_f	Cations	R_f
Ag+	0·19	Cr+3	0·59	Mo+6	0·65	Sr+2	0·85
Al+3	0·68	Cs+	0·66	Mg+2	0·85	Te+4	0·55
As+3	0·35	Fe+2	0·64	Nb+5	0·02	Th+4	0·70
Au+3	0·43	Fe+3	0·62	Ni+2	0·60	Ti+4	0·06
Ba+2	0·88	Ga+3	0·82	Pb+2	0·66	UO_2+2	0·53
Be+2	0·68	Hg_2+2	0·22	Rb+	0·81	VO+2	0·63
Bi+3	0·72	Hg+2	0·57	Ru+3	0·60	Cu+2	0·76
Cd+2	0·81	Ir+4	0·74	Sb+2	0·36	W+6	0·02
Ca+2	0·66	K+	0·83	Se+4	0·57	Y+3	0·61
Ce+3	0·71	La+3	0·68	Sn+2	0·86	Zr+4	0·04
Co+2	0·80	Mn+2	0·68	Sn+4	0·69	Zn+2	0·77
Ce+4	0·89					Pt+4	0·55

Solutions (containing 190–200 γ) of titanium and other cations were spotted on the TLC plate in the form of a uniform streak. The plates were then dried and kept in the developing solvent methanol-50% nitric acid (9 : 1) till the solvent ascended about 12 cm. on the plate. Pilot chromatograms were run under similar conditions to ascertain the positions of the respective spots after development. Only titanium spot was found to be at the point of application. The R_f values for the 46 metal ions were determined (Table I). Binary mixtures of titanium with copper, aluminium and chromium were also subjected to separation by the above method. The portion containing titanium on the TLC plate was cut and removed by a spatula into a beaker. Titanium was recovered by leaching six times with 5% HCl solution. The combined washings were then reduced to 2 ml by evaporation on a waterbath. Titanium was then determined spectrophotometrically using sulphosalicylic acid[2]. The results obtained indicated that titanium can quantitatively be separated from copper while the separation of titanium in the other binary mixtures yielded low results.

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DETERMINATION OF SOME MINERAL ELEMENTS IN CERTAIN COMMON MAMMALIAN EYE-LENSES

CHANGES in the composition that occur with the development of cataract in eye lenses are available in literature but very few investigations are reported on the distribution of mineral elements in mammalian eye lenses. Some of these elements are present as prosthetic group on co-factors or enzyme molecules and therefore play an important role in cellular metabolism. It was therefore considered desirable to determine the composition of the eye lenses of some of these mammals.

The eye lenses of Rat (*Ratus ratus*), Order Rodentia; Rabbit (*Oryctologus cemulus*), Order Lagomorpha; Goat (Capra) and Buffalo (*Bubalus bubalus*), Order Artiodactyla; Dog (*Canis familiaris*) and Cat (Domestic), Order Carnivora; Monkey (*Macaca mulatta*), Order Primate were

TABLE I

The mineral contents in mammalian eye lenses

	Ca	Mg	Fe	Zn	Cu	Mn
	mg/100 g		← μg/100 g →			
Rat	3·5	0·48	580	—	—	—
Dog	5·6	4·1	68	1780·0	160·0	—
Cat	6·3	3·7	42	1535·0	148·0	—
Rabbit	3·8	0·51	670	18·3	4·1	8·1
Buffalo	4·9	0·96	106	216·0	216·0	27·3
Goat	4·3	1·02	119	246·0	290·0	20·1
Monkey	4·5	0·32	406	270·0	65·0	—

— not detected.

The values are calculated on the basis of wet weight of eye lenses and is the mean of four determinations each from a group consisting of 30–50 eye lenses.

selected for the present study as they belong to different orders of class mammalia.

The whole eye balls were obtained within two hours of the death of the animal. To minimize variation due to age, the eye balls from the adult animals were taken. They were carefully dissected and the lenses were freed from the capsule and the surrounding tissues on ice, blotted lightly to remove adhering moisture, dried in a vacuum desiccator to constant weight and ashed at 550° C. The acidified solution of ash was used for the estimation of calcium[1], magnesium[2], iron[3] copper[4], zinc[5] and manganese[6].

Results and Discussion

The results (Table I) do not show any consistent change in the order arranged, though variations are found among these species. The degree of such variations seems to be mainly dependent on the feeding habits of the animals. Magnesium, calcium and zinc are significantly high in carnivores as compared with the other animals, whereas the opposite correlation exists for iron content. Burdon-Cooper has reported traces of zinc in some species[7] and the absence of iron and copper in ash of individual lenses[8] but Carmi[9] has shown the presence of iron in traces. In the present study, iron was found in the eye lenses of all the species studied, being maximum in rabbit and rat eye lenses. Copper was totally absent in the rat but traces were found in the rabbit. Schlopak *et al.*[10] also confirmed the presence of traces of iron and copper in some of the animal lenses. Manganese was absent in dog, cat, rat and monkey but present in traces in rabbit, goat and buffalo eye lenses.

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IMPROVEMENT OF THE NUTRITIVE VALUE OF TOMATOES

TOMATOES. popular as the 'poor man's apple', constitute one of the chief vegetable crops of our country. Extensive research work is being carried out in order to develop newer varieties with disease resistance and high yield. However, so far no attempt has been made in our country to improve its nutritional value from the point of view of vitamin A It is to be noted that even though the tomatoes form a good source of vitamin C, they are rather poor as a source of vitamin A, since lycopene, the pigment mainly responsible for red