electrostatic and non-electrostatic contributions. Such separation of the medium effects into two categories is supported in the recent literature[9,17,18].

Summary

The acido-basic equilibria of bidentate salicyloyl hydrazine (LH) in aquo-organic media of varying composition (20–80%) is investigated by the pH metric titration technique at $28 \cdot 0 \pm 0 \cdot 2^{\circ}$ C. The terminal amino nitrogen of the ligand associates with a proton (LH_2^+) in the pH region of 2–5, while the ortho hydroxyl proton dissociates above pH of 6·0. The variation of the stability constants with the increase in the co-solvent (acetonitrile, dioxane, or methanol) are explained on the basis of electrostatic and non-electrostatic parameters.

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CORRELATION BETWEEN SUPEROXIDE DISMUTASE AND CATALASE ACTIVITY IN RED BLOOD CELLS OF DIFFERENT ANIMALS

IT has been demonstrated that erythrocuperin prepared from bovine or from human erythrocytes possesses superoxide dismutase activity[1]. The precise physiological role of superoxide dismutase is not clear at present, although its rapid destruction of superoxide anion in cells and tissues would eliminate a probable toxic substance (superoxide anion) by forming molecular oxygen and hydrogen peroxide[2]. The latter in turn could be destroyed rapidly by catalase. Both of these enzymes are present in relatively high concentrations in erythrocytes[3]. Since these enzymes might be expected to function together, their determination in various animals may be very useful for understanding their physiological roles.

The blood was collected from healthy animals in heparinized test tubes. The red blood cells were collected by low speed centrifugation and washed thrice with physiological saline. The cells were hemolysed with water (1 : 10) and then again centrifuged at 5000 rpm to separate the ghosts. The clear supernatant was used as the source of the enzyme. The haemoglobin was determined by cyanomethaemoglobin method[4].

Superoxide disumtase activity was determined by t. e method of Nishikimi *et al.*[5]. The reaction mixture (3 ml) contained 50 μ moles of nitro blue tetrazolium (NBT), 78 μ moles NADH and 3·1 μmoles of phenazine methosulphate (PMS). The reaction was carried out in 0·017 M sodium pyrophosphate buffer pH 8·3 at 25° C and the optical density was recorded at 530 nm. The catalase activity was determined by the method of Sinha[6].

Considerable variations in the level of catalase and superoxide dismutase were noted in the red blood cells of various animals. The results are presented in Table I. The lowest superoxide dismutase activity was observed in frog erythrocytes whereas high level of these was observed in erythrocytes of man, goat and chick. It is apparent that erythrocytes which show high superoxide dismutase activity also have high catalase activity and *vice versa*. However, Hartz *et al.*[7] have shown that there is no relationship between the levels of catalase and superoxide dismutase in human tissue. The results presented here show that in different species, this correlation does exist since

TABLE I

Superoxide dismutase and catalase activity in red blood cells

Animal	Haemoglobin (Hb) gm/100 ml blood	Superoxide dismutase activity *EU/mg. Hb.	Catalase activity μ moles H_2O_2 disappeared/mg. Hb./min.
Man	11·00–15·53 (13·26)**	1·32–2·50 (1·76)	190·5–348·5 (260·8)
Dog	13·21–15·20 (14·30)	1·50–1·67 (1·54)	217·9–256·9 (237·4)
Sheep	10·97–14·27 (12·62)	1·40–2·01 (1·68)	179·6–226·0 (191·3)
Goat	11·42–14·69 (13·18)	1·57–2·04 (1·74)	220·9–279·8 (257·3)
Monkey	12·58–15·67 (14·30)	0·87–1·60 (1·35)	110·5–180·7 (144·9)
Mouse	10·83–14·30 (12·53)	1·04–1·52 (1·28)	89·5–140·7 (113·9)
Rat	11·37–13·29 (12·90)	1·35–1·62 (1·45)	90·0–153·5 (130·7)
Chick	7·06–10·26 (8·15)	1·54–2·02 (1·81)	180·8–301·2 (232·5)
Frog	6·01– 9·40 (8·26)	0·97–1·44 (1·23)	83–3–122·6 (100·6)

* EU = Enzyme unit : Enzyme required for 25 % inhibition of NBT reduction.

** Figures in parantheses are the average values.

both are scavangers of the probable toxic substances, *viz.*, superoxide anion and hydrogen peroxide, produced during the interaction of molecular oxygen with many dehydrogenases and non-heme iron proteins[8, 9].

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STABILITY CONSTANTS OF CADMIUM (II) AND LEAD (II) CHELATES OF 2-AMINO-3-HYDROXYPYRIDINE

2–AMINO–3–HYDROXYPYRIDINE (AHP) has recently been described as a potential spectrophotometric reagent[1]. In continuation to our work[2,3] on polarographic investigations on cadmium (II) and lead (II) complexes of substituted pyridines, in this note, we describe polarographic determinations of stability constants for cadmium (II) and lead (II) chelates of AHP. Stability constant data on cadmium (II) and lead (II) are valuable as they form the basis for the choice of a suitable chelating agent for removal of the metal ions from human body in the case of metal-poisoning.

Experimental

Details of the polarograph and the experimental technique have been described in earlier communication[4]. Analar grade reagents were used and the solutions were prepared in double distilled water. pH was maintained using NH_4Cl–NH_4OH buffer (pH = 9·1 ± 0·1). Potassium chloride was used as supporting electrolyte (μ = 0·1) and gelatin (0·005%) as maximum suppressor. Polarograms were recorded for solutions containing 1×10^{-4} M metal ion and varying amounts of AHP along with suitable amounts of buffer, supporting electrolyte and maximum suppressor. All measurements were made at 35·0±0·1° C.

Results and Discussion

Well defined single cathodic waves are obtained in each case. Analysis of the polarographic waves was