

TABLE I

Detection of some opium alkaloids on TLC plates with aqueous mercuric nitrate spray

Alkaloid	Colour	Minimum detectable limit (μg)
Morphine	Reddish brown	2
Codeine	Yellow	10
Thebaine	Yellowish brown	2
Papaverine	Yellow	2
Narcotine	Yellow	2

donors and the formation of charge transfer complexes may be the very likely mechanism of colour formation. The reagent was applied for visualizing the alkaloids of opium in crude extracts as well as many other samples of forensic interest.

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PALLADIUM(II) CHELATES OF SOME o-NITROSOPHENOLS

THE literature survey shows that, not much work has been done on the metal complexes of ambidentate ligands containing -OH and -NO groups¹⁻³. Here we report the preparation and spectral study of Pd-complexes of the type Pd(qo)₂, where qOH represents one of the following:

4-Chloro-, 4-bromo-, 4-methyl-, 5-methoxy-2-nitrosophenols, 3-nitroso-4-hydroxy-coumarin, 2-nitroso-1-naphthol, 1-nitroso-2-naphthol, 3-chloro-, 3-bromo-1-nitroso-2-naphthols.

The complexes of 4-substituted phenols were prepared using the method described by Charalambous *et al.*¹. Other complexes were prepared in aqueous medium by reacting the metal salt with respective ligands. The pH was adjusted between 2.0 to 4.5. Excess ligand was removed by Soxhlet extraction with petroleum ether. The complexes were dried under vacuum over P₂O₅ and analysed. The elemental analysis shows that the ratio of metal to ligand is 1:2.

All complexes are non-electrolyte in DMSO. Infrared spectra were recorded on Nujol mull. The main features of spectra are as follows:

(i) The band characteristic of intramolecular hydrogen bonded OH which occurs at about 3100 cm⁻¹ in the ligand is not observed in spectra of complexes. The characteristic band attributable to co-ordinated water in the region 3400 cm⁻¹ is not observed in complexes.

(ii) The spectra of complexes show that there is decrease in C=O, C=N and an increase in N-O frequencies; this confirms the formation of complexes. The similarity of spectra of complexes and the ligands where O-H...O bond has been well established enables us to conclude oximic structure in the solid state.

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γ -RADIOLYSIS OF SOME REDOX SYSTEMS

WE had reported recently¹⁻³ results of our study on certain redox reactions, which though thermodynamically possible do not occur with any detectable rate, but go to completion on gamma irradiation at room temperature.

We present here results of our study on γ radiolysis of aqueous solutions of the following redox mixtures: (a) S₂O₃²⁻/NO₂⁻, (b) S₂O₃²⁻/BrO₃⁻, (c) S₂O₃²⁻/IO₃⁻, (d) As(III)/IO₃⁻, (e) Sb(III)/BrO₃⁻ and (f) Sb(III)/IO₃⁻ under conditions of neutral pH [(a) to (d)] and pH = 13 [(e) and (f)]. The γ -irradiations were effected

from a ^{60}Co source at a rate of 18 krad/min, and the actual dose determined by Fricke dosimetry and corrected for respective electron densities in each case. Changes in the concentrations of the reductant $\text{S}_2\text{O}_3^{2-}$, As(III) and Sb(III) were determined iodometrically and the corresponding G values calculated, for different proportions of initial concentrations of the reductants (0.5 to 50 mM) and the oxidants (1 to 100 mM).

While the radiolysis of a pure thiosulphate solution yields S and H_2S , the same is completely oxidized to $\text{S}_4\text{O}_6^{2-}$ and SO_4^{2-} in the presence of an oxidant, the G ($-\text{S}_2\text{O}_3^{2-}$) value being distinctly higher in the presence of a halate ion (3-9) than in the presence of the nitrite ion (0.75 to 1.10).

The G[-As(III)] in the presence of IO_3^- is 3.4 which is much higher than in the case of radiolysis of a pure arsenite solution (2-4).

Similarly in the radiolysis [Sb(III), the G-Sb(III)] is much higher in the presence of an oxidant BrO_3^- or IO_3^- , compared to a pure solution of Sb(III). One noticeable difference between the BrO_3^- and IO_3^- oxidants, is that the G [-Sb(III)] is independent of the BrO_3^- ion concentration whereas it is practically directly proportional to the IO_3^- ion concentration over the same range (0.1 to 0.01 M).

The G values observed in all the cases can be explained on the basis of the participation of the primary radiolysis products of water, viz., e_{aq}^- , H, OH and H_2O_2 .

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SOLUBILIZATION OF ELASTOIDIN BY ALKALI TREATMENT

ELASTOIDIN found in shark fins is an unusual type of intracellular structural protein belonging to the collagen family¹⁻³. The major structural component of elastoidin is considered to be a typical collagen associated with non-collagenous protein rich in tyrosine⁴. They are assumed to be tightly bound and considered to be inseparable except by severe treatment^{4,5}. The inherent insolubility of elastoidin fibres renders chemical investigation of its constitution extremely difficult. We now report the solubilization of elastoidin fibres by the action of alkali in saturated salt solution, a treatment known to disrupt intramole-

cular crosslinkages⁶. Kuhn *et al.*⁶ had reported that action of alkali on collagen brings about the splitting of β -components into α -chains by the scission of intramolecular linkages. It is therefore expected that the collagenous and non-collagenous components in elastoidin fibres can be separated by this treatment.

Elastoidin fibres were exposed to the action of alkali as per the method of Kuhn⁶. The fibres were suspended in 5% sodium hydroxide saturated with sodium sulphate, at 4°C for 15 days. The viscous solution obtained was dialysed against 0.3% acetic acid with several changes and the dialysant was analysed. The analysis of the dialysant showed an increase in the content of hydroxyproline and glycine. Cysteine was absent and tyrosine content is very much reduced (Table I).

TABLE I

Amino acids content of the elastoidin fibre, solubilized elastoidin and shark skin collagen

Sample	Hy-	Glycine	Tyro-	Cys-
	droxy- proline		sine	teine
amino acid residues/1000 residues				
1. Elastoidin fibre	55	281	49	2
2. Solubilized elastoidin	58	306	18	0
3. Shark skin collagen*	60	338	3.3	0

* ref. 9.

The results (Table I) show progressive enrichment of collagenous portion in the dialysant. This is corroborated by the determination of the specific rotation of the dialysant which was found to be $(\alpha)_{405} = -978$, the corresponding value for the native collagen is $(\alpha)_{405} = -1020$ and for the denatured collagen $(\alpha)_{405} = -300^6$. Similarly the denaturation temperature is found to be 31.2°C as compared with the value 29°C for shark skin collagen⁷. The absence of cysteine as well as increase in denaturation temperature may be ascribed either to the loss of cysteine containing peptides during dialysis or to the conversion of these residues to lysinoalanine by β -elimination induced by alkali⁸. The nature of this collagenous component derived from elastoidin is under investigation.

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