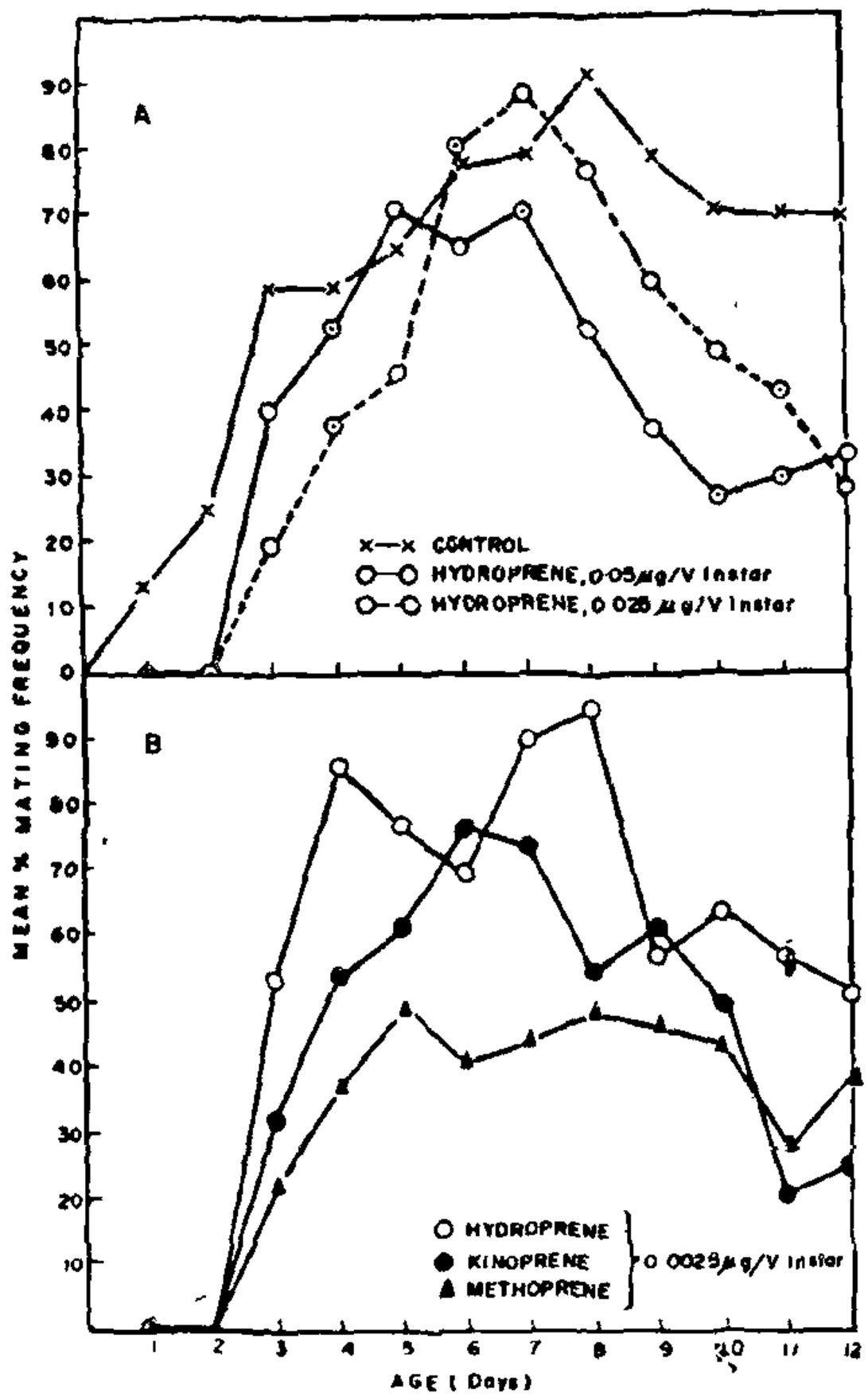

FIG. 1. Mating activity rhythms of control (A) and treated (B) in *D. koenigii* at different doses of different JHAs (at LD 12 : 12, Temp. 27 ± 1° C, 60–65% R.H.).

There is some evidence[9] that such functional effects are probably corolleries of subtle morphological distortions caused by JH activity. However, further elaborate investigations are needed to determine (i) the precise causal factors, (ii) whether these effects need to be taken into consideration in assessments of JH activity at the less than 100% MI doses and (iii) whether they can be exploited *per se* for control purposes, especially in view of some indications[11] of such a likelihood.

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PALLADIUM(II) COMPLEXES OF SCHIFF BASES DERIVED FROM HETEROCYCLIC ALDEHYDES

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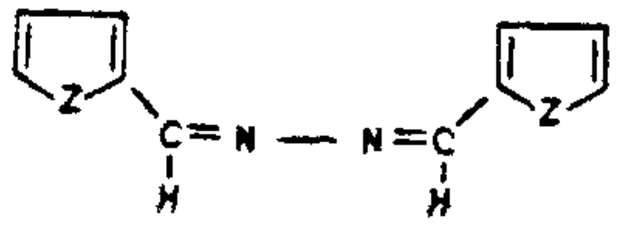
ABSTRACT

The Schiff bases R–CH=N–N=CH–R (where R = furan or thiophene) have been prepared by the condensation of aldehyde with hydrazine in the ratio of 2 : 1. Their palladium(II) complexes $[PdL_2Cl_2]$ have also been synthesized and characterized by various physico-chemical studies. The complexes are diamagnetic and appear to have a square planar geometry.

INTRODUCTION

SCHIFF bases continue to find wide application in coordination chemistry, but the nitrogen/oxygen donor groups are, getting superseded by ligands containing other donors.

We are currently investigating the general donor properties of these ligands (I) and wish to report here, their preparation and characterization. Synthesis and structural studies on the palladium(II) complexes of these Schiff bases have also been described in the present communication.



(I)

Experimental

All chemicals used were of BDH or equivalent quality. N,N′-bis(furan-2-carbaldimine) and N,N′-bis (thiophene-2-carbaldimine) were prepared by the gradual addition of 4·6 g of the freshly distilled furfural or thiophene-2-aldehyde (Aldrich) over a period of 30–60 min to a mixture of 2·4 g of powdered hydrazine sulphate, 18 ml of water and 2·4 ml of concentrated aqueous ammonia (sp. gr. 0·88). The yellow solid obtained was filtered, washed with water and recrystallized from aqueous alcohol as needle-shaped crystals.

Preparation of Pd(II) Complexes

$PdCl_2$ (1·77 g; 0·01 mole) was dissolved in 5–10 ml concentrated HCl and the solution was diluted to about 100 ml. The ligand (0·02 mole), dissolved in ethanol (15 ml) was added to it with continuous stirring, when a yellow crystalline precipitate was obtained. It was filtered, washed first with water, then with aqueous alcohol and dried under vacuo over P_2O_5 at ~ 110° C.

Other details of the experimental work may be found elsewhere[1].

Results and Discussion

The Schiff bases and their palladium(II) complexes, along with their melting points and analytical data are listed in Table I. On the basis of the conductance measurements, the complexes appear to be non-electrolytes and the molecular weight determinations show that they are monomeric in solution. The magentic measurements indicate these to be diamagnetic complexes. Henee these may be considered having square planar structures with the formulae PdL_2Cl_2.

Infrared spectra

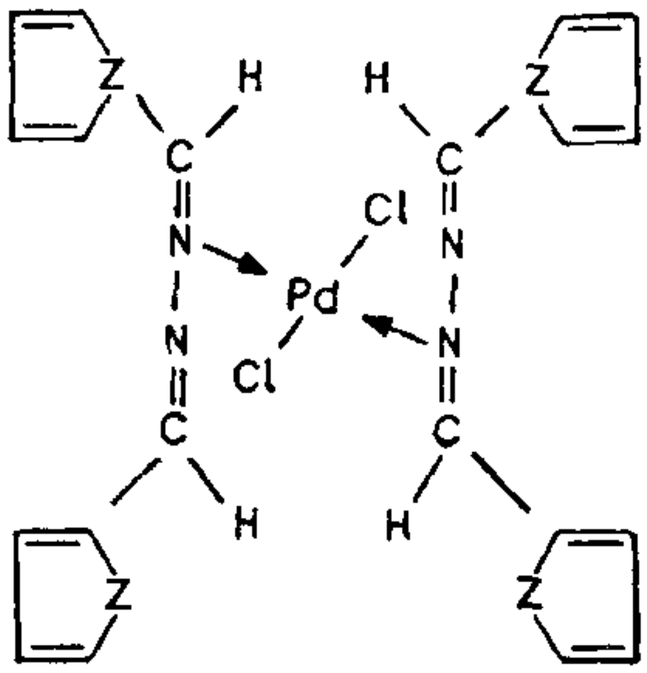
The bands resulting from N, N′-bis (furan-2-carbaldimine) [bfc] and N,N′-bis (thiophene-2-carbaldimine) [btc] are observed at 1640 and 1600 cm^{-1} corresponding to ν(C=N) vibrations[8] respectively and at 956 and 946 cm^{-1} for ν(N–N) vibrations[9] respectively. Assignments of the various frequencies of furan[2] and thiophene[3] parts have been given in our earlier work.

The infrared spectra of these two ligands and their complexes show no evidence of ν(N–H) bands. The ν(C–Z) mode of bfc and btc (1274 and 718 cm^{-1} respectively) remain unchanged in the spectra of these addition complexes, indicating that the heterocyclic atom Z (O or S) is not involved in bonding. However, a sharp negative shift in ν(C=N)[4] to 1618 and 1564 cm^{-1} respectively and a postive shift in ν(N–N)[5] in the complexes as compared to the spectra of two ligands indicate that azomethine nitrogen is involved in the coordination. The bands appearing at ~ 490 and 495 cm^{-1} in the spectra of the palladium(II) complexes of bfc and btc respectively may be assigned to ν[Pd(II)–N] mode[6–7], whereas those occurring around 340 and 345 cm^{-1} respectively to ν[Pd(II)–Cl] mode[6–7].

Table I

Compound	Colour	M. pt. (°C)	Found (calcd) % C	H	N	Cl	Pd
N-N′, bis-(furan-2-carbaldimine) (bfc)	Light yellow	111–12	63·74 (63·83)	4·10 (4·26	14·80 (14·89))	..	..
N-N′, bis-(thiophene-2-carbaldimine) (btc)	Light yellow	155–56	54·44 (54·55)	3·52 (3·64)	12·71 (12·73)	..	..
[Pd (bfc)$_2$Cl$_2$]	Dirty yellow	228–30	43·10 (43·37)	2·78 (2·89)	10·01 (10·12)	12·6 (12·83)	18·95 (19·23)
[Pd (btc)$_2$Cl$_2$]	Bright yellow	>280	38·92 (38·87)	2·50 (2·59)	8·98 (9·07)	11·73 (11·50)	17·09 (17·23)

The infrared spectral studies thus indicate that bfc and btc behave as neutral ligands in their palladium(II) addition complexes, the bonding site being the azomethine nitrogen:



(Z=O for bfc and S for btc)

(II)

ACKNOWLEDGEMENTS

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EFFECT OF ALLOXAN DIABETES ON MYOCARDIAL LIPOLYSIS

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ABSTRACT

Lipolysis of heart triglyceride labelled with (1^{14}–C) palmitate, which was increased in alloxan diabetes, was reduced by addition of free fatty acids in the incubating medium. Comparison of residual radioactivity after incubation of normal and diabetic hearts at $0{\cdot}6 \times 10^{-3}$ M (normal) and $1{\cdot}2 \times 10^{-3}$ M (diabetic) levels of palmitate respectively suggested decreased lipolysis *in vivo* as the contributory cause of enhanced accumulation of triglyceride in diabetic heart.

STATE of lipolysis of myocardial lipids in diabetes *in vivo* is not well defined. Although increased rate of lipolysis of heart triglyceride in diabetes during perfusion in the medium containing physiological level of free fatty acids (FFA) has been shown[1], the same may not be true in diabetes *in vivo* due to increased concentration of FFA in blood[2] which is known for inhibitory action on the myocardial lipolysis. We have therefore studied lipolysis of cardiac lipids prelabelled with (1^{14}–C) palmitate in normal control, alloxan diabetic and insulin-treated diabetic rats in the absence as well as in the presence of physiological level of FFA and that level of FFA found in blood of diabetic rats. In order to ascertain *in vivo* the state of lipolysis of heart lipids in diabetes, data of normal and diabetic rats were compared when heart slices were incubated in the medium consisting of FFA in the concentration which was observed in the blood of normal and diabetic rats respectively.

The rats were made diabetic by administering alloxan monohydrate (BDH Ltd., England) and were treated with lente insulin [Boots Co. (India) Ltd., India] as described recently[4]. All the animals, including controls which were treated only with physiological saline, were fasted for 6 hrs before they were killed. Myocardial lipids were labelled with (1^{14}–C) palmitate of 30 mCi/m mole specific activity (Bhabha Atomic Research Centre, Bombay) by intravenously injecting with the tracer as palmitate-albumin complex at a dose level of 100 μCi per kg in the left ventricle of

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