Palladium(II) and Platinum(II) Complexes with Tridentate Iminophosphine Ligands and their Phosphine Derivatives; Synthesis and Structural Studies

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Bidentate aminophosphines comprising hard and soft donor atoms continue to attract the attention of coordination chemists. These ligands exhibit partial lability where the coordination mode alters between bidentate and monodentate and back again, leading to coordinatively unsaturated metal centres. Late transition metal complexes of this type of ligand have been shown to mediate a range of catalytic transformations [1] and recently, have also shown potential as antitumour agents [2]. Expanding on this premise, we prepared tridentate ligands with P, N and O donor atoms by condensation of *o*-diphenylphosphinoaniline with substituted salicylaldehydes and explored their complexation behaviour towards group 10 metal centres. These were found to deprotonate readily upon reaction with Pd(II)Cl_2, Pt(II)Cl_2 and (cod)Pt(II)I_2 to form complexes of general formula [η^3(L)M(II)X]. Furthermore, these complexes undergo substitution reactions with monodentate phosphines, PR_3, to yield complexes of the general formula [η^3(L)M(II)PR_3]ClO_4. These were characterised by spectroscopic, microanalytical and crystallographic methods.

A series of crystal structures representative of the work is discussed in detail comparing and contrasting palladium complexes with their platinum counterparts [η^3(L^3)Pd(II)Cl], [η^3(L^2)Pt(II)Cl] and [η^3(L^2)Pt(II)I] and phosphine derivatives, [η^3(L^3)Pd(II)PPh_3]ClO_4, [η^3(L^4)Pd(II)P(tolyl)$_3$]ClO_4, [η^3(L^4)Pt(II)P(tolyl)$_3$]ClO_4. Crystal studies confirm tridentate [P,N,O] coordination of the deprotonated ligands to the metal centres and the formation of both five- and six-membered rings with both halide and phosphine derivatives.

[1] Zehnder M., Schaffner S., Neuberger M., Plattner D., *Inorganica Chimica Acta*, 2002, **337**, 287*, and references therein*. [2] Habtemariam A., Watchman B., Potter B.S., Palmer R., Parsons S., Parkin A., Sadler P.J., *Journal of the Chemical Society, Dalton Transactions*, 2001, 1306.

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