The role of the side group in reactions involving 1-propyl-2-methylimidazole and 1-propyl-2-imidazole-carboxaldehyde and Co(II), Ni(II), Cu(II) and Zn(II) ions.

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The complexing properties of 1-propyl-2-methylimidazole (1-Pr-2-CH3Im) and 1-propyl-2-imidazolecarboxaldehyde (1-Pr-2-CHOIm) with CoII, NiII, CuII and ZnII were investigated pH-metrically at 25oC and at the ionic strength of 0.5 mol dm-3(KNO3). The stability constans calculated indicate the formation of complexes with metal: ligand ratio of 1:1, 1:2, 1:3, and 1:4. The stability of the metal complexes with both imidazoles depends mostly on the substituent situated between the nitrogen atoms of the imidazole ring. It was found that the carboxalaldehyde oxygen atom participates in the formation of the coordination bond. The formation of the weak chelate copper (II)-1-propyl-2-imidazolecarboxaldehyde complexes was confirmed by EPR spectra. The electronic spectra reveal that the cobalt(II) forms both tetrahedral and octahedral species with 1-Pr-2-CH3Im, but 1_Pr-2-CHIIm forms only six-coordinated compounds. The NMR spectra of 1_Pr-2-CHOIm indicate that hydration of the CHO takes place when Zn(II) ions are introduced into the ligand solution at pH5.03.