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STUDIES IN
CANCER CHEMOTHERAPY

A Thesis Presented to the University of Auckland
for the degree of
Doctor of Philosophy
by
Ian Christopher Dean

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The role of metals in biological processes has been discussed with particular emphasis on the importance of chelation. Fürst has suggested that many anticancer drugs may owe their activity to their chelating properties. A number of new amidoximes and hydroxyamidines have been made from the appropriate imidoyl chloride and a hydroxylamine. The spectral and chelating properties of these compounds are discussed. All the compounds have been submitted to the anticancer screening programme of the National Cancer Institute. The results available so far are presented and indicate that the compounds are toxic but inactive against experimental tumours.

Sodium sulphide reduces α-phenyl-α-nitro-cinnamonic acid (106) to 2-amino-3-phenylquinoline-1-oxide (107) in good yield. Extension of the reduction to other α-nitro-cinnamonic acids gives very poor results. The spectral properties, configurations and conformations of the α-nitro-cinnamonic acids are discussed. The 2-aminoquinoline-1-oxide group is shown to form solid metal complexes. That from 2-amino-3-phenylquinoline-1-oxide (107) with nickel has been prepared. Antitumour screening results are presented for several 2-aminoquinoline derivatives. None of these compounds appears to be active.