

Thesis Title	Interaction of a Benzimidazole Antimalarial Drug with DNA.
Name of Student	Siriwan Srisook
Degree	Master of Science
Concentration	Physical Chemistry
Major Advisor	Asso.Prof. Bhinyo Panijpan Ph.D. Assis.Prof. Prapin Wilairat Ph.D.
Faculty	Faculty of Science
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### Abstract

The interaction of Hoechst 48101 with various types of DNA was studied using a combination of spectroscopic methods (absorption and fluorescence) and hydrodynamic measurements (viscosity). These results have been used to clarify the mechanism of binding.

Spectrophotometric studies and show that Hoechst 48101 preferentially binds to A.T. rich DNA, the fluorescence intensity being enhanced to a greater degree as compared to that for G-C rich DNA. Also the double helical structure is better for binding than denatured DNA. Hoechst 48101 does not increase the viscosity of DNA significantly. Furthermore Hoechst 48101 causes the precipitation of DNA at the ratio of Hoechst 48101 to DNA of about 0.04. Hoechst 48101 causes an increase in the DNA-T<sub>m</sub>, which is greater the higher the A-T content of DNA. The

transition range is also sharpened.

Hoechst 48101 binds to DNA as demonstrated by decreases in the extinction coefficient and the bathochromic effect. Analysis of Scatchard plot of Hoechst 48101 and spectrofluorometric studies indicate that the strong binding should be a hydrophobic interaction rather than an ionic one. The spectral change and the rise in melting temperature of Hoechst 48101 upon interacting with DNA indicates that Hoechst 48101 prefers A-T bases, whereas chloroquine, an intercalating drug, can bind to both G-C and A-T bases. Our studies suggest that Hoechst 48101 binds to DNA by partial intercalation or outside-binding.

## BIOGRAPHY

Name : SIRIWAN SRISOOK  
Date of Birth : December 17, 1957  
Place of Birth : Songkhla, Thailand  
Institution attended :

Chulasamai School, Songkhla

March, 1971 ----- Certificate of Pratom VII

Waranareechalearm School, Songkhla

March, 1976 ----- Certificate of Mathayom Suksa V

Prince of Songkhla University, Songkhla

March, 1980 ----- Bachelor of Science in Chemistry