

MOLECULAR DESIGN BY CYCLOADDITION REACTIONS
OF HETEROCYCLES WITH SOME DIENOPHILES

Tadashi Sasaki, Ken Kanematsu, Yusuke Yukimoto,

Toshiyuki Hiramatsu, and Eiji Kato

Institute of Applied Organic Chemistry, Faculty of Engineering,

Nagoya University, Chikusa, Nagoya

Cycloaddition reactions of cycloheptatriene with coumalic acid and its methyl ester afforded two types of bridged tetracyclic compounds, 6-carboxy- (Ia) and 6-carbomethoxy-tetracyclo[5.4.0.0^{2,4}.0^{3,8}]undeca-5,10-diene (IIa), together with (6 + 4)cycloadduct (IIIa), respectively. Similar reactions with 4,6-dimethylcoumalic acid and its ethyl ester gave only the tetracyclic derivatives, 2-carboxy- (IIc) and 2-carbomethoxy-1,3-dimethyl-tetracyclo[5.4.0.0^{2,4}.0^{3,8}]undeca-5,10-diene (IId), respectively.

Cycloaddition reactions of acenaphthylene with coumalic acid derivatives and 1,2,4,5-tetrazine derivatives afforded 1 : 2 adducts and/or fluoranthene derivatives and diazafluoranthene derivatives, respectively. Cycloaddition reactions of iso-pyrazole with diphenylcyclopropenone were also examined and afforded two types of 1 : 1 adducts, homodiazepinone and diazocinone.