

*Qualitative and quantitative Features of Delay Differential  
Equations and Applications to Biology*  
**Fathalla Rihan**  
(United Arab Emirates University)

Recently much attention has been given to mathematical modeling of real-life phenomena using differential equations with memory, such as delay differential equations (DDEs). This is due to the fact that the introduction of memory terms in a differential model significantly increases the complexity of the model. Such a class of DDEs is widely used for analysis and predictions in various areas of life sciences and modern topics in population dynamics, computer science, epidemiology, immunology, physiology, and neural networks. In this paper, we provide a wide range of delay differential models that have a richer mathematical framework (compared with ODEs) for the analysis of biosystems. Qualitative and quantitative features of DDEs are discussed. Some numerical simulations are also provided to show the effectiveness of the theoretical results.