Modeling and simulations developed for examining the physiological structures and
dynamical behaviours of the
neurons are of importance in terms of supporting the experimental studies. In this
study the electrical theory of
excitation propagation in excitable cell was investigated. The basic principals of linear
cable theory were given
and general differential equations concerning excitable cells were derived. The passive
cable model simulation
of neuron was made through the programme of MATLAB7.0.4/Simulink. In order to
reach the realistic model,
which is one of the main targets of the study, two simplified and revised models were
used. A realistic wave
shape was produced in MATLAB7.0.4/Simulink as the action potential wave shape
spreading in neuron. They are
as expected in the simplified model. When the simulation results of the two simplified
and revised models
compared, in the output of the revised model the minimum amplitude is seen to
decrease. In the revised model,
an ideal capacity element which we recommend was found.