

CONTENTS	Page
Summary	i
Chapter I : Introduction and review of literature	1
1.1 Introduction	1
1.2 Review of literature	5
1.2.1.Review on the electroretinogram (E.R.G.).	7
1.2.2.Review on the dielectric methods.....	9
1.2.3.Review on I.R. spectra	11
1.2.4.Review on retinal histology.....	15
Aim of the work	18
Chapter II: Theoretical aspects	20
II.1.Theoretical aspects of E.R.G.	20
II.1.1.Electrical phenomena in the retina and optic nerve	20
II.1.2.The electroretinogram (E.R.G.)	20
a-Temperature effects	24
b-Retinal adaptation	24
c-Ionic mechanisms and resistance changes .	27
II.1.3. Ophthalmic instruments	30
II.2.Theoretical aspects of dielectric methods.....	32
II.2.1.The used biophysical dielectrical methods	32
II.2.2.Dielectric parameters.....	35
II.3.Theoretical aspects of infrared absorption spectra	41
II.3.1.Electromagnetic radiation energies and types of molecular spectra	42
II.3.2.Vibration of molecules.....	43
II.3.3.Main applications of infrared spectroscopy to chemical analysis.....	48
Chapter III: Techniques and Methods	50
III.1.Method of the electroretinographic (ERG) recording	50

III.2.The dielectric method	51
III.3.Infrared spectrophotometric technique	53
III.3.1.Sample preparation for I.R. study	54
III.3.2.Infrared spectrophotometer	54
III.3.3.Physical parameters of absorption spectrophotometry	55
III.4.Histological technique	57
III.4.1.Light microscope preparations.....	57
III.4.2.Electron microscope preparations	59
Chapter IV.Results and discussion	60
IV.1.1.Chicken electroretinogram	60
IV.1.2.Effect of the temperature variations the chicken ERG.....	63
IV.1.3.Effect of laser on the chicken ERG responses	70
a-Effect of laser on the ERG of light adapted eyes	71
b-Effect of laser on the ERG of dark adapted eyes	78
IV.2.Variations of dielectric constant of chicken eye subjected to laser beam at different temperatures.....	88
IV.3.Laser effect on IR retinal spectra	110
IV.4.The histological studies	131
IV.4.1.Light microscopic studies	131
a-Normal retinal structure	131
b-The structure of the laser exposed retina	133
IV.4.2.Electron microscopic studies	135
General Conclusion	138
References	143
Arabic summary	