

CHAPTERS	CONTENTS	PAGE NO
I	CHAPTER I	1
	1.1. Introduction to Nanotechnology	1
	1.2. Historical Prospects of Nanoscience and Nanotechnology	1
II	CHAPTER II	8
	2.1. Nanoparticles	8
	2.2. Methods of Nanoparticle Synthesis	8
	2.3. Plant-Based Synthesis of AgNPs	10
	2.4. Plant Derived Nanoparticles	11
	2.5. Mechanism Behind Synthesis	14
	2.6. Green Synthesis of Nanoparticles	15
	2.7. Merits of Green Synthesis	16
	2.8. Plants and Green Nanotechnology	17
	2.9. Role of Plants and Phytochemicals in Nanoparticle Synthesis	18
	2.10. Different Parts of Plants Used to Produce Metallic NPs	21
	2.10.1. Stem as Source for Nanoparticle Synthesis	21
	2.10.2. Fruits Mediated Synthesis of Metallic Nanoparticles	22
	2.10.3. Seeds as Source	23
	2.10.4. Leaves Mediated Synthesis of NPs	23
	2.10.5. Flowers as Source for NPs Production	23
III	CHAPTER III	25
	3.1. Characterization of Synthesized AgNPs	25
	3.2. UV/Vis Spectrophotometry	25
	3.3. Photoluminescence (PL) Spectroscopy	25
	3.4. Fourier Transform Infrared (FT-IR) Spectroscopy	25
	3.5. X-Ray Diffraction (XRD) Analysis	26
	3.6. Scanning Electron Microscopy (SEM)	26

3.7. Transmission Electron Microscopy (TEM)	27
3.8. Energy Dispersive X-ray (EDAX) Analysis	27
3.9. Dynamic Light Scattering (DLS) Analysis	28
3.10. Atomic Force Microscopy (AFM)	28
3.11. Selected Area Electron Diffraction (SAED) Analysis	28
3.12. X-ray Photoelectron Spectroscopy (XPS)	28
3.13. Inductively Coupled Plasma with Mass Spectrometry/Atomic Emission Spectrometry (ICP-MS/ICP-AES)	28
3.14. Inspiring Bricks of Literature on Phytosynthesis of AgNPs	29
IV CHAPTER IV	31
4.1. Applications of Metallic Nanoparticles	31
4.2. Optical Function	31
4.3. Catalyst Function	31
4.4. Thermal Function	31
4.5. Electrical Function	31
4.6. Mechanical Function	31
4.7. Magnetic Function	31
4.8. Application of Nanoparticles in Paints	32
4.9. Application in Chemical Catalysis	32
4.10. Pharmacological Application of Metallic Nanoparticles	33
4.10.1. Anti-Bactericidal Activities of Metallic Nanoparticles	33
4.10.2. Anti-Fungicidal Activities of Metallic Nanoparticles	33
4.10.3. Antiplasmodial Activity of Metallic Nanoparticles	34
4.10.4. Anti-Inflammatory Action of Nanoparticles	34
4.11. Application of Nanoparticles in Medical Treatments	34
4.12. Anticancer Studies on Plant Mediated Nanoparticles	35
4.13. Antiviral Effects of Metallic Nanoparticles	36

4.14. Antidiabetic Management of Metallic Nanoparticles	36
4.15. Antioxidant Mechanisms of Plant Derived Nanoparticles	37
4.16. Commercial Applications of Biosynthesized Nanoparticles	37
4.16.1. Waste Water Treatment	37
4.16.2. Cosmetics	37
4.16.3. Nanoparticles in Food Industry	38
REFERENCES	39