

Contents

CONTENTS

CHAPTER		PAGE NO.
	LIST OF TABLES	
	LIST OF FIGURES	
	LIST OF PLATES	
	LIST OF APPENDICES	
1	INTRODUCTION	1
2	REVIEW OF LITERATURE	6
2.1	Cotton	7
2.1.1	Introduction	7
2.1.2	History of Cotton	7
2.1.3	Kinds of Cotton	9
2.1.4	Properties of Cotton	9
2.1.5	Importance of Cotton	9
2.1.6	Advantages of Cotton	11
2.1.7	Disadvantages of Cotton	11
2.1.9	Uses of Cotton	11
2.2	Weaving	12
2.1.2	plain weave	12
2.3	Nanotechnology	12
2.3.1	preparation of nanoparticles	13
2.3.2	Advantages of nanotechnology	13
2.4	Textile Finishing	16
2.4.1	Requirements of finishing	16
2.4.2	Classification of finishes	17

2.4.3	Aesthetic finishes	17
2.4.4	Function finishes	17
2.4.5	Chemical finishes	17
2.4.6	Herbal finishes	18
2.5	Special Finishes	18
2.5.1	Antimicrobial finishing	18
2.5.2	Importance of antimicrobial finishing	18
2.5.3	Fragrance finishing	19
2.5.4	Importance of fragrance finishing	19
2.5.5	Mosquito repellent finishing	20
2.5.6	Importance of mosquito repellent finishing	20
2.6	Herbs	21
2.6.1	Eucalyptus globules	21
2.6.2	Hemidesmus indicus	21
2.6.3	Santalum album	21
2.7	Home Textiles	22

CHAPTER	TITLE	PAGE NO.
3	EXPERIMENTAL PROCEDURE	23
3.1	Selection of Material	24
3.2	Pretreatment of Fabric	24
3.2.1	Desizing of fabric	25
3.2.2	Bleaching of fabric	25
3.3	Selection of finishing	25
3.3.1	Selection of herbs	26
3.3.2	Selection of binder	26
3.4	Pilot study	26
3.4.1	Selection of solvent	26
3.5.	Method of Extraction	27
3.5.1	Soxhelt extraction	27
3.6.	Optimization of finishing parameters	27
3.6.1	Concentration of herbal solution	27
3.6.2	Citric acid	30
3.6.3	Optimization time and temperature	30
3.7	Methods of Finishing	31
3.7.1	Conventional method	31
3.7.2	Ultra sonic atomizing method	32
3.7.3	Nano spray drying method	33
3.8	Nomenclature	36
3.9.	Evaluation	36
3.9.1	Evaluation of Samples	36
3.9. 2	Physical Properties Test	36
3.9.2.1	Fabric weight	36
3.9.2.2	Fabric thickness	37

3.9.3	Mechanical Properties	37
3.9.3.1	Tensile strength	39
3.9.3.2	Abrasion resistance	39
3.9.4	Comfort Properties Test	39
3.9.4.1	Fabric stiffness test	39
3.9.4.2	Crease recovery test	40
3.9.5	Absorbency Test	40
3.9.5.1	Drop test	40
3.9.5.2	Sinking test	42
3.9.5.3	Capillary rise test	42
3.9.6.	Assessment of functional properties	42
3.9.6.1	Evaluation of Antibacterial activity	42
3.9.6.2	Evaluation of Mosquito repellent property	43
3.9.6 .3	Evaluation of Fragrance finishing	43
3.9.9	Wash durability test	44
3.10	Product development	44

4	RESULTS AND DISCUSSION	46
4.1.1	Sensorial Evaluation	47
4.1.2	Assessment of physical properties	48
4.1.2.1	Fabris weight	48
4.1.2.2.	Fabric thickness	49
4.1.3	Assessment of mechanical properties	51
4.1.3.1	Tensile strength and elongation	51
	a. Tensile strength – warp	51
	b. Tensile strength – weft	51
	c. Elongation – warp	54
4.1.3.2.	d. Elongation – weft	54
4.1.4	Abrasion resistance	57
4.1.4.1.	Assessment of comfort properties	59
	Fabric stiffness	59
	a. Fabric stiffness – warp	59
	b. Fabric stiffness – weft	59
4.1.4.2	Crease recovery	62
	a. Crease recovery – warp	62
	b. Crease recovery – weft	62
4.1.4.3	Fabric drapability	65
4.1.5	Absorbency test	67
4.1.5.1	Drop test	67
4.1.5.2.	Sinking test	67
4.1.5.3.	Capillary test	67
4.1.6	Assessment of Functional properties	71
4.1.6.1	Antibacterial activity	71
4.4.1.6.2	Mosquito repellent test	77
4.1.6.3	Fragrance finishing	77
		79

4.1.7	SEM analysis	82
4.1.8	Evaluation of Wash durability	
5	SUMMARY AND CONCLUSION	83
	BIBLIOGRAPHY	88
	APPENDIX	95

LIST OF TABLES

TABLE NO.	TITLE	PAGE NO.
I	OPTIMIZED FINISHING PARAMETER	31
II	NOMENCLATURES	36
III	SENSORIAL INSPECTION	47
IV	FABRIC WEIGHT	48
V	FABRIC THICKNESS	49
VI	TENSILE STRENGTH (WARP)	51
VII	TENSILE STRENGTH (WEFT)	52
VIII	ELONGATION (WARP)	54
IX	ELONGATION (WEFT)	55
X	ABRASION RESISTANCES	55
XI	FABRIC STIFFNESS (WARP)	59
XII	FABRIC STIFFNESS (WEFT)	60
XIII	CREASE RECOVERY (WARP)	62
XIV	CREASE RECOVERY (WEFT)	63
XV	FABRIC DRAPABILITY	65
XVI	DROP TEST	67
XVII	SINKING TEST	67
XVIII	CAPILARY RISE TEST	69
XIX	ANTIBACTERIAL ACTIVITY	71
XX	CONCENTRATION OF FRAGRANCE IN THE FABRIC	77
XXI	CONCENTRATION OF FRAGRANCE IN THE WASHED FABRIC	78
XXII	RELEASE RATE OF THE FRAGRANCE	78
XXIII	RELEASE RATE OF THE FRAGRANCE IN WASHED FABRIC	79

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
I	FABRIC WEIGHT	50
II	FABRIC THICKNESS	50
III	TENSILE STRENGTH-WARP	53
IV	TENSILE STRENGTH-WEFT	53
V	ELONGATION-WARP	56
VI	ELONGATION-WEFT	56
VII	ABRAISON RESISTANCE	58
VIII	FABRIC STIFFNESS-WARP	61
IX	FABRIC STIFFNESS-WEFT	61
X	CREASE RECOVERY-WARP	64
XI	CREASE RECOVERY-WEFT	64
XII	FABRIC DRAPABILITY	66
XIII	DROP TEST	68
XIV	SINKING TEST	68
XV	CAPILRY RISE TEST	70
XVI	ANTIBACTERIAL ACTIVITY	75

LIST OF PLATES

PLATE NO.	TITLE	PAGE NO.
I	<i>EUCALYPTUS GLOBULES</i>	28
II	<i>HEMIDESMUS INDICUS</i>	28
III	<i>SANTALUM ALBUM</i>	28
IV	SOXHLOT EXTRACTER	28
V	HERBAL SOLUTION	28
VI	CITRI ACID	28
VII	PILOT STUDY	29
VIII	DYE BATH	29
IX	ULTRASONIC ATOMIZER	29
X	NANO SPRAY DRIYER	29
XI	NANO PARTICLES	29
XII	GSM CUTTER	38
XIII	FABRIC THICKNESS GAUGE	38
XIV	TENSILE STRENGTH TESTER	38
XV	FABRIC ABRASION TESTER	38
XVI	STIFFNESS TESTER	38
XVII	CREASE RECOVERY TESTER	38
XVIII	DROP TEST	41
XIX	SINKING TEST	41

XX	CAPILARY RISE TEST	41
XXI	NANO UV SPCTRO PHOTOMETER	41
XXII	PILLOW CASE	41
XXIII	ANTIBACTERIAL ACTIVITY AGAINST STAPHPHYLLOCOCCUS	73
XXIV	ANTIBACTERIAL ACTIVITY AGAINST E-COLI	73
XXV	ANTIBACTERIAL ACTIVITY AGAINST STAPHPHYLLOCOCCUS IN WASHED SAMPLES	74
XXVI	ANTIBACTERIAL ACTIVITY AGAINST E-COLI IN WASHED SAMPLES	74
XXVII	MOSQUITO REPELLENT TEST	76
XXVIII	SEM ANALYSIS	80