<u>C O N T E N T S</u>

.

.

.

.

.

		•
CHAPTER	,	PAGE
I	INTRODUCTION	່ 1
II	<ul> <li>MATERIALS AND METHODS</li> <li>1. Plant Material</li> <li>2. Culture Media</li> <li>3. Aseptic Techniques</li> <li>4. Culture Techniques</li> <li>5. Measurements of Growth</li> <li>6. Plating Techniques</li> <li>7. Histological Procedure</li> <li>8. Cytological Procedure</li> <li>9. Šcreening of <u>Pteris vittata</u> L. Plants for antibacterial substances</li> <li>10. Camra lucida diagrams</li> <li>11. Photomicrography</li> </ul>	17
III	<ul> <li><u>STUDIES ON INITIATION, GROWTH AND</u> <u>DIFFERENTIATION OF RHIZOME TISSUES OF</u> <u>PTERIS VITTATA L. IN VITRO</u></li> <li>Experiment No. 3-1: Initiation of Callus from Rhizome Segments of <u>Pteris vittata L.</u></li> <li>Experiment No. 3-2: Regeneration and controlled Differentiation from Rhizome segments of <u>Pteris vittata L.</u></li> <li>Experiment No. 3-3: Effect of Macro- elements as present in different culture media on Growth of <u>Pteris</u> <u>vittata L.</u> (rhizome) callus</li> </ul>	<b>31</b> ,

#### CHAPTER

IV

PAGE

Experiment No. 3-4: Growth of Pteris vittata L. rhizome callus Experiment No. 3-5: Effect of Inorganic nutrients on Growth of Pteris vittata L. callus Experiment No. 3-6: Morphogenetic effect of Sucrose and 2,4-D Interactions on Pteris vittata L. rhizome callus Experiment No. 3-7: Histological Studies of Callus subjected to Sucrose-2,4-D Interactions Experiment No. 3-8: Effect of NAA on Pteris vittata L. rhizome callus Experiment No. 3-9: Colony formation from Sporophytic Cell Suspension of Pteris vittata L. Discussion STUDIES ON ROOT AND LEAF CULTURES OF PTERIS VITTATA L. Experiment No. 4-1: Establishment of

55

Experiment No. 4-1: Establishment of excised root culture Experiment No. 4-2: Effect of Indoleacetic acid (IAA) on growth of excised roots of <u>Pteris vittata</u> L. Experiment No. 4-3: Effect of kinetin on induction of apospory

- ii -

### CHAPTER

#### PAGE

- iii -

V

# IN VITRO STUDIES ON GAMETOPHYTES AND GAMETOPHYTIC CALLUS OF PTERIS VITTATA L.

65

Experiment No. 5-1: Initiation of callus on prothalli Experiment No. 5-2: Effect of sucrose level in the medium on the differentiation of callus Experiment No. 5-3: Effect of mineral nutrition on apogamy in gametophytes Experiment No. 5-4: Regeneration of gametophytes from free cells isolated from gametophytic suspension culture and obtained directly from the prothalli Experiment No. 5-5: Effect of different concentrations of sucrose on the

development of sporophytes

## CHAPTER

~

PAGE

78

87

Experiment No. 5-6: Screening of <u>in vitro</u> plants for the presence of Antibacterial substances Discussion

- iv -

VI	IN VITRO STUDIES ON ADIANTUM
	TRAPEZIFORME L. GAMETOPHYTES AND
	GAMETOPHYTIC CALLUS
	Experiment No. 6-1: Spore and its
	germination
	Experiment No. 6-2: Development and
	regeneration of prothallus
	Experiment No. 6-3: Effect of sucrose
	concentrations on prothalli
	Experiment No. 6-4: Regeneration of
	gametophytes from prothallial cells
	Experiment No. 6-5: Initiation of
	callus on prothalli
	Experiment No. 6-6: Differentiation
	of callus
	Discussion
VII	IN VITRO STUDIES ON THELYPTERIS
	AUGESCENS (LINK) MUNZ ET JOHNSDON

Experiment No. 7-1: Spore-morphology and germination Experiment No. 7-2: Prothallial development Experiment No. 7-3: Development of leaf callus

.

CHAPTER		PAGE
VIII	GENERAL DISCUSSION	91
	SUMMARY	128
	BIBLIOGRAPHY	135

v

•

APPENDIX I

1

· · · · ·

1

٠

---00000000----

2

,

.

.

.

,

,