CONTENTS

PAGE

ABSTRACT I - II

CHAPTER 1 1

INTRODUCTION 2

Literature on edible plants/products from Indian forests other than Mahuda flowers 2

Consumption of various edible forest products by Indian tribes 4

Nutritional studies on edible plant products 8

Detoxification processes employed to remove the limiting factors of plant products 13

Literature on Mahuda flowers 22

Collection and storage pattern of Mahuda flowers among hill tribes 23

Common uses of Mahuda flowers 27

CHAPTER 2 34

DETERMINATION OF NUTRITIVE COMPOSITION OF MAHUDA FLOWERS

Introduction

Nutritional composition of Mahuda flowers 36

Materials and Methods 40

Analytical Procedures

i) Moisture 40

ii) Total Protein 41

PAGE

III) Total Fat 42

IV) Total Sugar 42

V) Reducing Sugar 43

VI) Total Ash 44

VII) Calcium content 44

VIII) Phosphorus content 45

Results and Discussion 46

CHAPTER 3 50

USE OF MAHUDA FLOWERS AS AN ENERGY YIELDING COMPONENT IN THE DIET

Introduction 51

Materials and Methods 53

Experimental diets 54

Autopsy procedure 59

Analytical procedures

I) Moisture content of the organs 60

II) Haemoglobin 60

III) Serum protein 61

IV) Hepatic lipids 62

V) Hepatic glycogen 63

VI) Blood sugar 63

Statistical Analysis 64

Results and discussion 65

Food intake 70

Body weight gain 72

PAGE

Organ weights 79

Moisture content of the Organs 81

Hepatic lipids 83

Hepatic glycogen content 85

Blood sugar levels 87

Haemoglobin concentration 87

Serum proteins 89

CHAPTER 4 94

USE OF PRESSURE COOKED MAHUDA FLOWERS AS AN ENERGY YIELDING COMPONENT IN THE DIET OF PREGNANT RATS, LACTATING RATS AND THEIR OFF-SPRINGS

Introduction 95

Materials and Methods 101

Autopsy procedure 104

Analytical procedures

I) Serum proteins 105

II) Haemoglobin 105

III) Hepatic lipids 105

IV) Histopathology of placenta 105

V) Serum protein fractions 106

Statistical Evaluation 108

Results and Discussion 108

Study 1

I) Food intake 109

II) Body weight gain 113

PAGE

iii) Litter size 116

iv) Litter weight 118

v) Placental weight 119

vi) Serum proteins 119

vii) Haemoglobin levels 121

viii) Histopathology of placenta 121

Study 2

i) Food intake 134

ii) Body weight changes 138

iii) Litter size 141

iv) Litter weight at birth 143

v) Weight of weaned pups 143

vi) Organ weight of pups 146

vii) Hepatic lipids 148

viii) Haemoglobin levels 148

ix) Serum total protein and Serum protein fractions 150

CHAPTER 5 155

PRESENCE OF SAPONIN IN MAHUDA FLOWERS, INVITRO PHARMACOLOGICAL INVESTIGATIONS AND NUTRITIONAL STUDY ON STEAM TREATED MAHUDA FLOWERS

Introduction 156

Materials and methods 162

Analytical Procedures

Study 1

i) Identification of Mahuda flowers saponin 162

PAGE

II) Thin layer chromatography technique (TLC) 163

III) Quantitative isolation of Mahuda flowers saponin 164

IV) Pharmacological studies (stud, 2) 164

V) Nutritional quality of steam treated Mahuda flowers (study 3) 165

Results and Discussion

Study 1 166

Study 2 171

Study 3 175

CHAPTER 6 180

SUMMARY AND CONCLUSIONS 181

BIBLIOGRAPHY 201

APPENDIX 219

I) Preparation of gel, gel slides and reagents 220

II) Preparation of TLC plates 221

III) Preparation of physiological salt solution (PSS / Tyrode) 222

IV) List of presentations, which forms a part of this dissertational work. 223