CONTENTS

Chapte	er Title		Page
I	INTRODUCTION	••••	1-29
· A)	The chemical control of undesirable fish; Piscicides	****	3
	1) Copper sulfate	****	4
	2) Rotenone	••••	4
	3) Toxaphene	••••	5
	4) Polychlorpynene (PCLP)	••••	5
	√5) Antimycin	*****	6
	6) Tri-fluoro methyl nitrophenol (TFM)	****	7
	7) Bayluscide or niclosamine	*****	3
	8) Other chemicals	••••	8
В)	A brief survey of piscicidal plants and their use in controlling undesirable fishes:	••••	8
	 The survey of the research work on indigenous piscicidal plants 	****	10
	 The survey of the research work on active principles (toxins) in piscicidal plants 	••••	12
	a) Rotenone	****	12
	b) Saponin	••••	12
	c) Tigliane, Daphnane Ingenane	••••	13
	d) Other active principles	••••	13
C)	A brief survey of the fish species used in research		
Ο,	work on indigenous piscicidal plants	••••	13
D)	A brief survey of the effects of piscicidal chemical		
	and indigenous plant toxins on behaviour of fish	••••	15
	1) Behavioural responses to piscicides	••••	15
	i) The effects of chemicals on behaviour of fish	••••	15
	ii) The effects of plant toxins on behaviour of fish	••••	16

• • • • •

Content (contd.)

Chapter	Title			
I contd.		The state of the s		
	2) Morphology and histological changes in fishes			
	due to piscicides	****	16	
,	i) Effects due to chemicals	•••••	16	
	ii) Effects due to plant toxins	•••••	17	
	3) Biochemical and physiological changes in fisher	s		
	due to piscicides	*****	18	
	i) Effects due to chemicals	••••	18	
	ii) Effects due to plant toxins	••••	20	
	a) Haemolysis	****	20	
	b) Effect on nervous system	••••	20	
	c) Effect on respiration	•••••	21	
	d) Effect on muscular system	••••	21	
	e) Effect on enzymes and other chemical constituents	••••	22	
E)	Analysis of the problem and plan of present work	*****	22	
	1) Choice of the indigenous plant	••••	26	
	2) Chemical characterization of the plant toxin		27	
	3) Choice of the animal	••••	27	
	4) Mucosubstances		27	
II	MATERIALS AND METHODS	•••••	30-44	
1)	Material	••••	30	
	A) Choice and site of collection of plant	••••	30	
	B) Classification of the plant	••••	30	
	C) Morphology of the plant	****	30	
	D) Selection of the fish	****	31	
	E) Classification of fish	****	31	
2)	Methods	••••	31	
	A) Extraction method	****	32	
	B) Methods of analysis	****	33	

Content (contd.)

Chapter		Title			Page
II	Conto	l .		4.4	
		C)	Experimental procedures	•••••	33
			a) Benzene Extract (BE)	*****	34
			b) Chloroform Extract (CE)	*****	34
			c) Ethanol Extract (EE)	••••	34
			d) Lc ₅₀	••••	35
		D)	Histological and histochemical methods	•••••	35
			a) Histological methods	*****	35
			b) Histochemical methods	****	36
			i) Neutral mucosubstances	••••	36
			ii) Acidic mucosubstances	****	37
			iii) Distinction between neutral and acidic mucosubstances	****	38
			iv) Distinction between sulfomucins and carboxy mucins	•••••	39
III			<u>OBSERVATIONS</u>	•••••	45-75
	1.	Obs	servations of leaf extract of L.eriocephalus	•••••	45
	2.	Phy	tochemical observations	****	45
		A.	TLC	*****	45
		В.	Melting point	*****	46
		c.	UV spectral observations	*****	47
		D.	NMR spectral observations	*****	47
		E.	IR spectral observations	*****	48
		F.	Atomic absorption spectrophotometric observations	•••••	48
	3.	The	e experimental procedures	****	48
		Α.	Set of experiment 1	****	50
		В.	Set of experiment 2	****	50
		C.	Set of experiment 3	****	50
	4.	Beh	avioural observations	****	51

•••••

Content (contd.)

Chapter		Title			Page
III contd.					
5.	5. Histological and histochemical observations			••••	53
	(i)	<u>Ora</u>	al cavity	••••	53
		A)	Normal histology of oral cavity	****	53
		В)	Histological alterations due to <u>L.eriocephalus</u> toxin	••••	53
		C)	Histochemical observations on the normal oral cavity	••••	55
		D)	Histochemical alterations due to L.eriocephalus toxin	••••	58
	(ii)	Gil	<u>ls</u>	••••	59
		A)	Normal Histology of gills	••••	59
		B)	Histological alterations due to L.eriocephalus toxin	•••••	59
		C)	Histochemical observations on the normal gills	••••	61
		D)	Histochemical alterations due to Leriocephalus toxin	•••••	65
	(iii)	Liv	er	****	66
		A)	Normal Histology of liver	••••	66
		B)	Histological alterations due to L.eriocephalus toxin	••••	66
		C)	Histochemical observation on the normal liver	•••••	67
		D)	Histochemical alterations due to Leriocephalus toxin	••••	69
	(iv)	Kid	lney	****	70
		A)	Normal histology of kidney	****	70
		B)	Histological alterations due to Leriocephalus toxin	****	71
		C)	Histochemical observations on the normal kidney	••••	72
		D)	Histochemical alterations due to Leriocephalus	••••	74
					•

Content (contd.)

Chapter		Title			Page	
IV			76-98			
	1.	Chemical composition and TLC			77	
	2.	UV spectral analysis			78	
	3.	NMR	spectral analysis	••••	79	
	4.	IR sp	ectral analysis	••••	80	
	5.	Ato	nic absorption spectrophotometric analysis	••••	81	
	6.	Physi	Physico-chemical studies analysis			
		A. p	ЭН	••••	82	
		В. П	00	••••	82	
		C. F	fardness	••••	83	
		D. L	C ₅₀ or LD ₅₀	••••	84	
	7.	Behav toxin	••••	86		
	8.	Discu	Discussion on histology and histochemistry			
		i) (87	
			A. Discussion on histology		87	
		E		****	88	
		ii) (•		89	
					89	
		E	•	••••	91	
		iii) L	iver		93	
		, <u> </u>		•••••	93	
		E		••••	95	
			•	*****		
		-	Cidney	****	95	
		A	3,	*****	95	
		Е	Discussion on histochemistry	••••	97	
V		<u>C</u>	GENERAL SUMMARY AND CONCLUDING REMARKS	9	99-109	
		1) (Genral summary	••••	99	
		2) (Concluding remarks	••••	108	
		••••	110-123			