

Cambridge University Press 978-0-521-06320-3 - Plant Lectins A. Pusztai Table of Contents More information

## Contents

	Acknowledgements	vii
	Introduction	1
1.	Lectins and their specificity	3
	D-mannose/D-glucose-specific lectins	4
	N-acetyl-D-glucosamine-binding lectins	9
	<i>N</i> -acetyl-D-galactosamine/D-galactose-binding lectins	14
	Ricinus communis lectins	15
	Soyabean (Glycine max) agglutinin	20
	Phaseolus vulgaris lectins (PHA)	24
	L-fucose-binding lectins	30
2.	Structure of lectins	32
	Primary sequences	32
	Metal binding sites	35
	Hydrophobic sites	36
	Glycosylation sites	37
	Carbohydrate-binding sites	37
	Three-dimensional structure	37
	Conclusions	38
3.	Localization and biosynthesis in plants	39
	Localization in the plant and cellular location	39
	Seeds	39
	Vegetative parts	43
	Biosynthesis of plant lectins	50
4.	Biological functions in plants	57
	Interactions with endogenous receptors	57
	Interactions with exogenous receptors	59
		v



Cambridge University Press 978-0-521-06320-3 - Plant Lectins A. Pusztai Table of Contents More information

## vi Contents

	Defence against microorganisms and potential	
	predators	60
	Legume-Rhizobium symbiosis	64
	Miscellaneous functions	70
5.	Effects on blood cells	74
	Agglutination	74
	Mitogenic stimulation of lymphocytes	78
	Immunosuppression	95
	Lectin-dependent blood cell cytotoxicity and	
	phagocytosis	101
	Lectin-induced mast cell reactions	102
6.	General effects on animal cells	105
	Insulin-mimicking effects on adipocytes and other	
	cells	105
	Effects of lectins on cells of the digestive tract	107
	Lectins in foods	108
	The nutritional toxicity of PHA	111
	Effects of PHA on the digestive tract in vivo	113
	Effects of other lectins on cells of the small	
	intestine	159
	Transport of lectins through the membranes of the	
	adult gut – a potential system for the oral	
	delivery of drugs	179
	Interactions with nerve cells and transneural	
	transport of lectins	183
	Miscellaneous interactions of lectins with cells and	
	their underlying structural elements	190
	Cytotoxins – magic bullets – immunotoxins	199
	References	206
	Glossary	251
	Index	253