Contents

1	Introduction
2	Definitions and General Characteristics: Early Findings
2.1	The Reactive Site5
2.2	The Standard Mechanism
3	Inhibitor Families of Plant Origin: Classification and Characterization
3.1	Kunitz Soybean Trypsin Inhibitor Family 12
3.1.1	General
3.1.2	Inhibitory Activity and Specificity
	of Inhibition
3.1.3	Content, Formation, and Degradation
	in the Seed
3.1.4	Gene Expression
3.1.5	Kunitz Soybean Trypsin Inhibitor-Like
	Inhibitors from Other Sources 16
3.1.5.1	Erythrina Seeds
3.1.5.2	Miscellaneous
3.2	Bowman-Birk Protease Inhibitor Family 23
3.2.1	Bowman-Birk Protease Inhibitor
	from Soybeans
3.2.1.1	General
3.2.1.2	Structure, Modifications, and Stability 25

3.2.1.3	Synthesis, Genes, and Genes Expression
3.2.2	Bowman-Birk Protease Inhibitors
	from Other Legume Seeds
3.2.2.1	From Peanuts
3.2.2.2	From Peas and Beans
3.2.2.3	From Miscellaneous Legume Seeds
3.2.3	Bowman-Birk Protease Inhibitors
	from Other Sources
3.3	Potato Inhibitor Families
3.3.1	General
3.3.2	Potato I Inhibitor Family
3.3.3	Potato II Inhibitor Family
3.3.4	Other Polypeptide Inhibitors
	of Serine Proteases
3.3.5	Carboxypeptidase Inhibitor 49
3.4	Squash Inhibitor Family 51
3.4.1	General
3.4.2	Isolation and Characterization52
3.4.3	Structure
3.4.4	Synthesis, Genes and Genes Expression56
3.5	Barley Trypsin Inhibitor Family59
3.6	Miscellaneous Inhibitors of Serine Proteases60
3.7	Cystatins (Cysteine Protease Inhibitors)
	of Plant Origin65
3.8	Other Specificities of Inhibition 70
4	Plant Protease Inhibitors in Nutrition75
4.1	Early Observations
4.2	Effect on Growth and on the Pancreas
4.3	Long-Term Feeding Effects and Relevance
110	to Humans
4.4	Later Nutritional Studies
4.5	Concluding Remarks
1.5	Concluding Remarks.
5	Plant Protease Inhibitors and Plant
•	Protection
5.1	General

Contents XI

5.2	Effect of Plant Protease Inhibitors	
	on the Development of Insects	
5.3	Induction of Plant Protease Inhibitors	
	in Plants	
5.4	Introduction of Plant Protease Inhibitors	
	into Plants by Genetic Engineering	
5.5	Induced Resistance of Insects	
	to Plant Protease Inhibitors	
5.6	Antifungal Plant Protease Inhibitors 109	
6	Plant Protease Inhibitors as Cancer	
	Chemopreventive Agents	
6.1	Introductory Remarks111	
6.2	At the Cellular, Tissue, and Organ Levels 112	
6.3	In the Organism	
6.4	Proposed Mechanisms of Anticarcinogenesis	
	of Protease Inhibitors	
7	Other Activities of Plant Protease Inhibitors 123	
7.1	Interaction with Plant Proteases	
7.2	Plant Protease Inhibitors as Allergens 125	
7.3	Plant Protease Inhibitors and Programmed	
7.5	Cell Death in Plants	
D (100	
Ketere:	nces	
Subject Index		