

Contents

1	Introduction	1
2	Structure, synthesis and analytical chemistry of tetrazolium salts and formazans	2
2.1	Structure of tetrazolium salts	2
2.2	Structure of formazans	6
2.3	Synthesis of formazans and tetrazolium salts	10
2.4	Analytical characterization of formazans and tetrazolium salts	15
3	Properties of the tetrazolium-formazan system necessary for histochemical use	17
3.1	Substantivity of tetrazolium salts and formazans	19
3.2	Reducibility of tetrazolium salts	21
3.3	Optical characteristics of tetrazolium salts and formazans	24
3.4	Localization quality of formazans	33
4	Correlations between chemical structure and histochemical qualities	35
4.1	General remarks	35
4.2	Substitution effects on tetrazolium salts and formazans	36
4.3	Tetrazolium salts for electronmicroscopical use	43
4.4	Fluorescent tetrazolium salts and formazans	46
4.5	The value of structure-staining correlations	48
5	Fundamentals for the biological use of the tetrazolium-formazan system	49
5.1	General remarks	49
5.2	Reduction of tetrazolium salts	51
5.3	Conditions affecting tetrazolium reduction	55
5.4	Mechanism of tetrazolium reduction	57
6	New nitro-monotetrazolium salts and their extended applications in histochemistry	62
6.1	'Nitrosensitivity' and the atypical formazan form of nitro-monotetrazolium salts	63
6.2	Histochemical use of the new nitro-monotetrazolium salts	65
7	Summary	66
8	References	68
9	Subject index	80