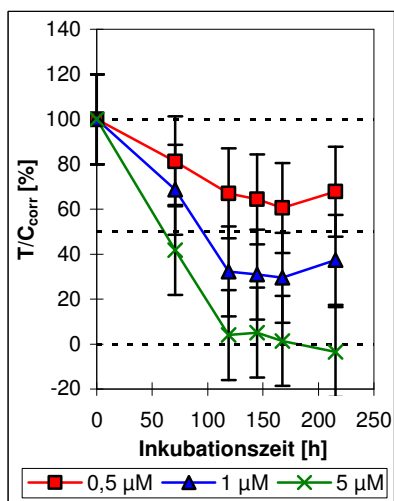


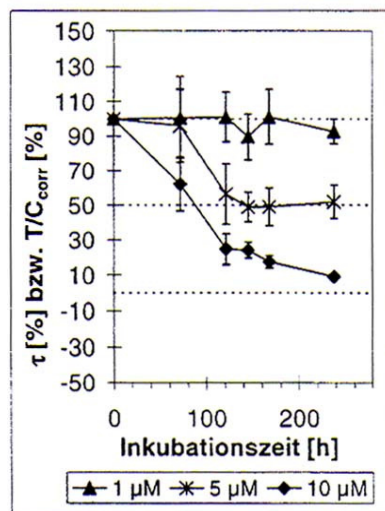
## 10 Anhang

### 10.1. Zeit-Wirkungs-Kurven der Zytotoxizitätstests

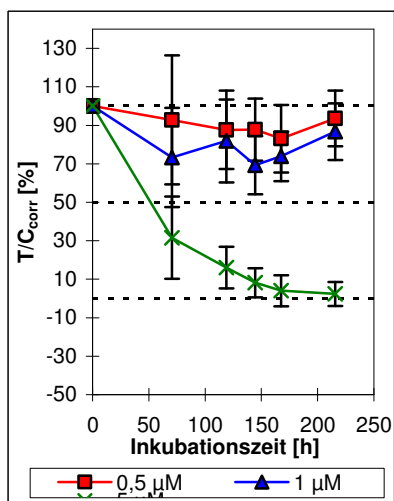
#### 10.1.1. Testung an der MCF-7-Zelllinie



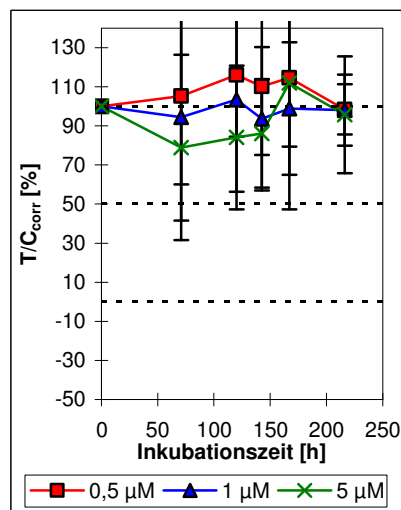
Cisplatin



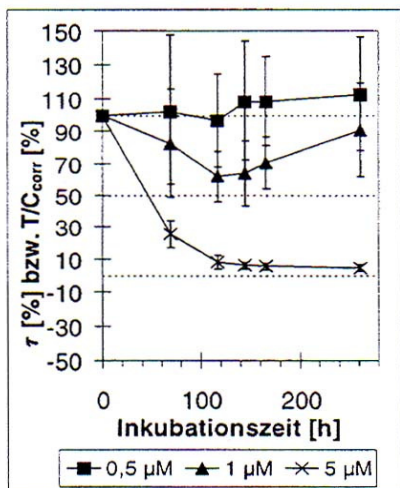
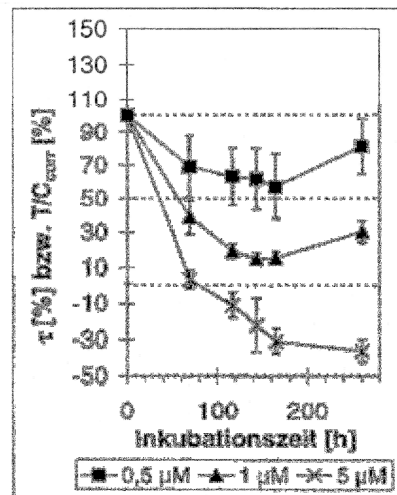
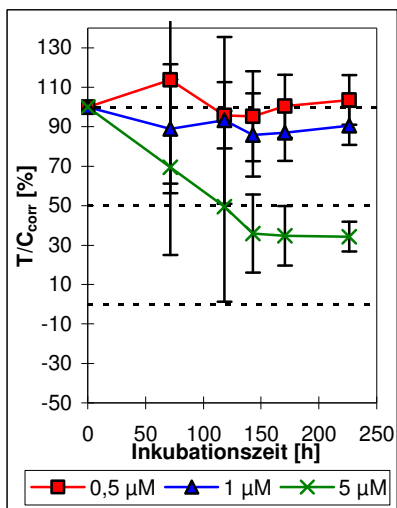
Carboplatin



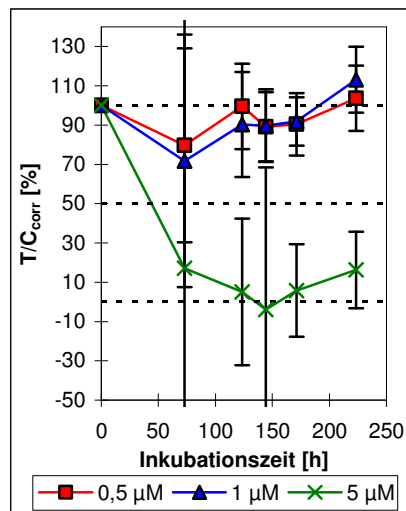
m-4F-PtSO<sub>4</sub>



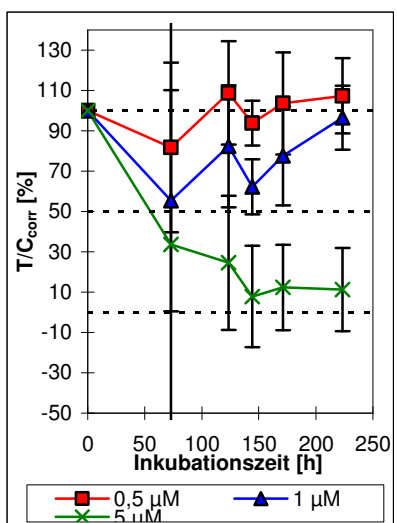
m-4F-Pt-DMSO

m-4F-PtCl<sub>2</sub>D,L-4F-PtCl<sub>2</sub>

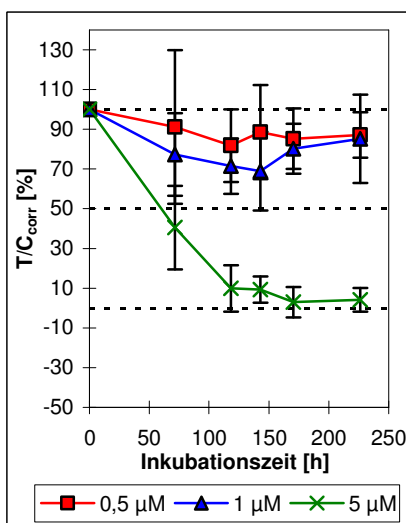
m-4F-OH-Mal



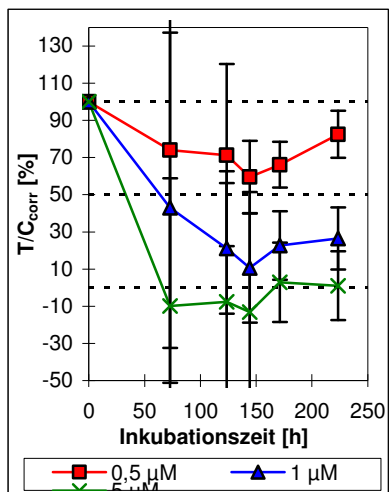
D,L-4F-OH-Mal



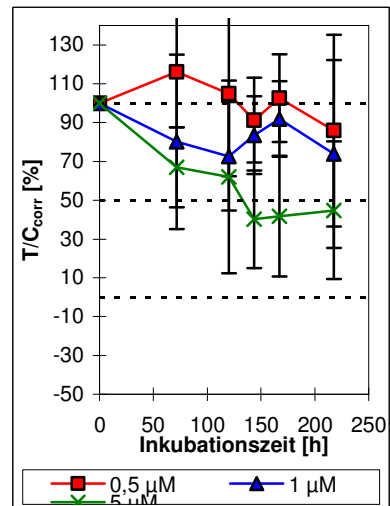
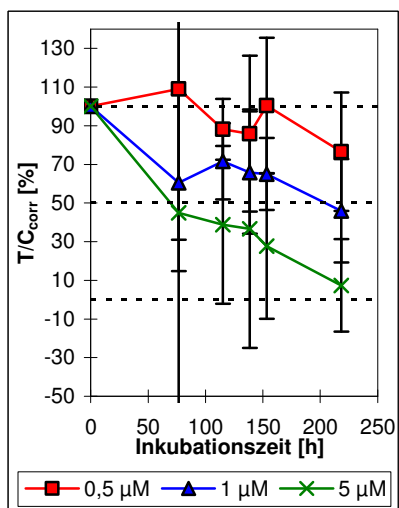
m-4F-Mal-Ester



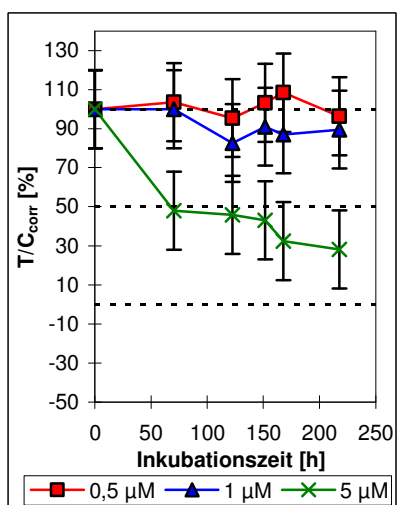
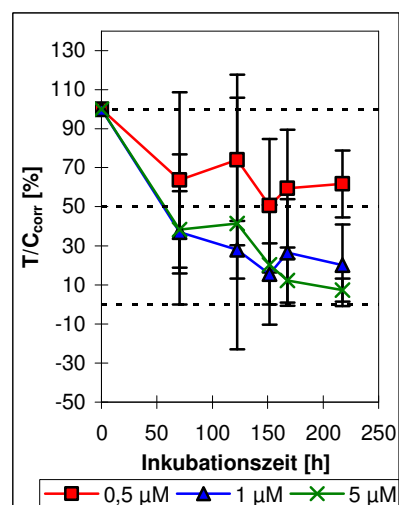
m-4F-SM-Mal

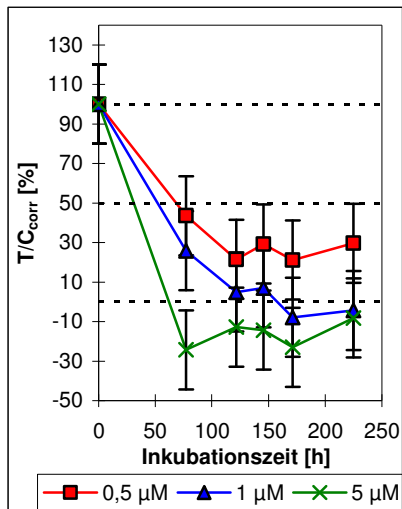
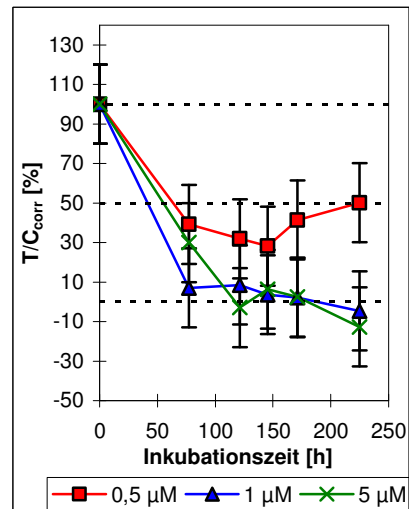
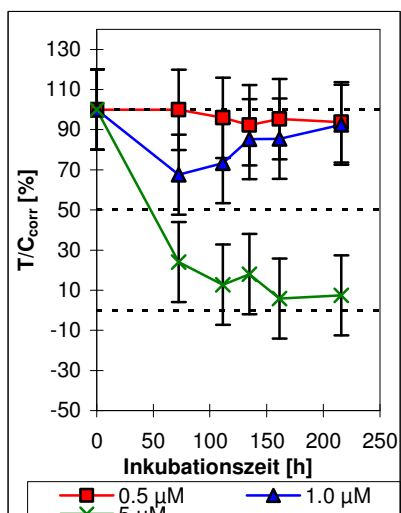
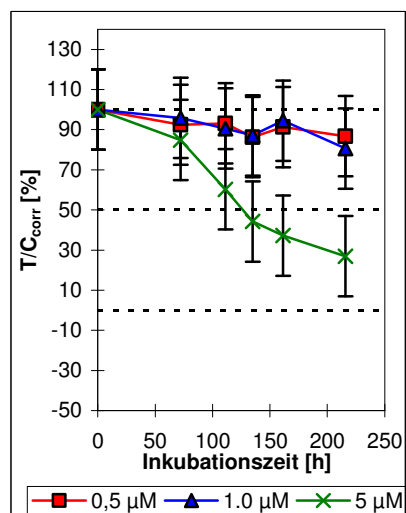
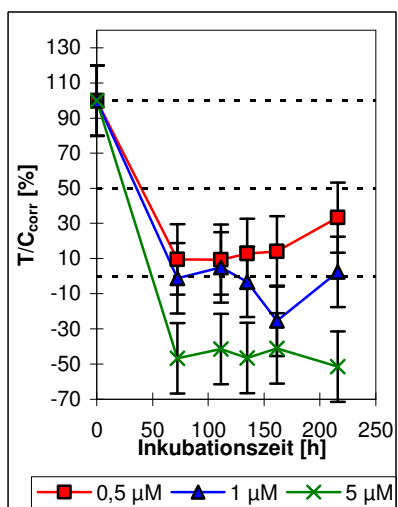
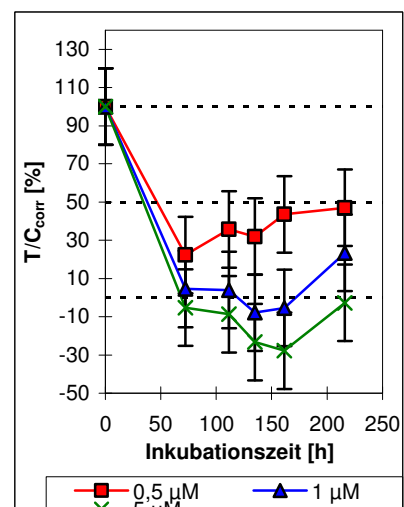


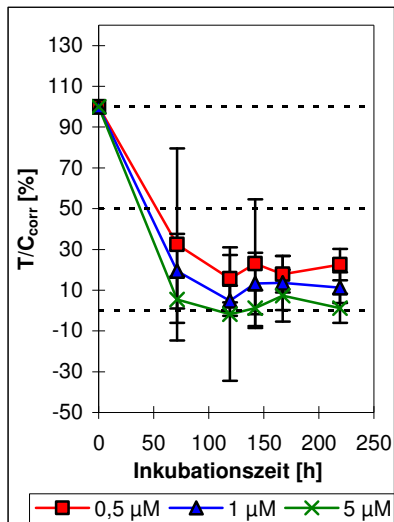
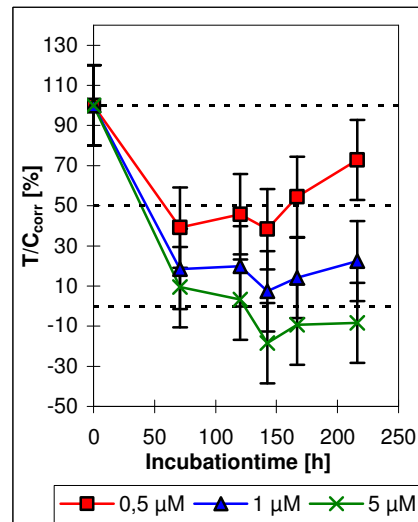
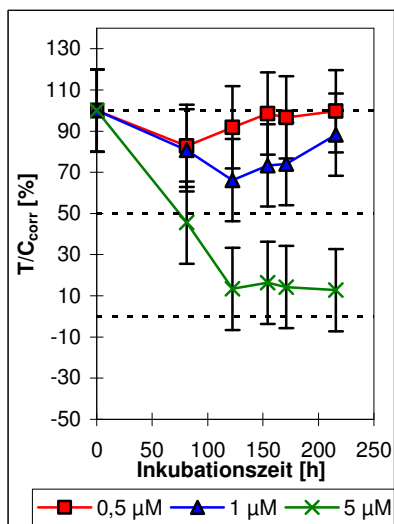
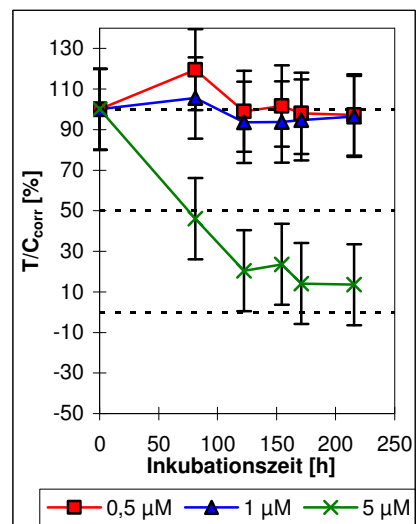
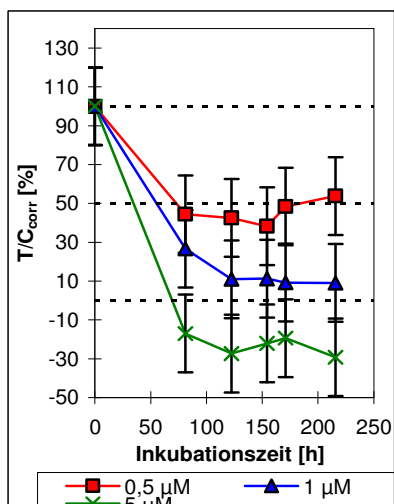
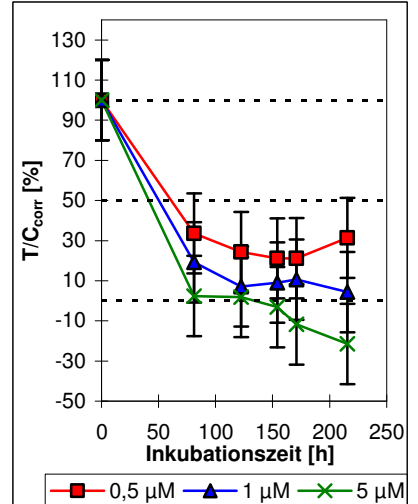
m-4F-AM-Mal

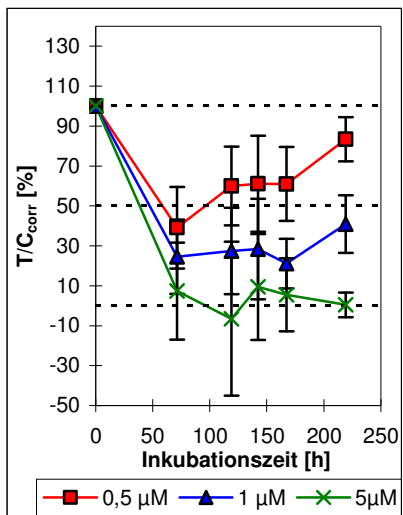
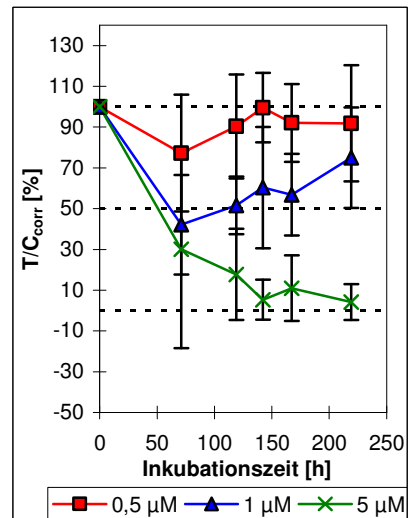
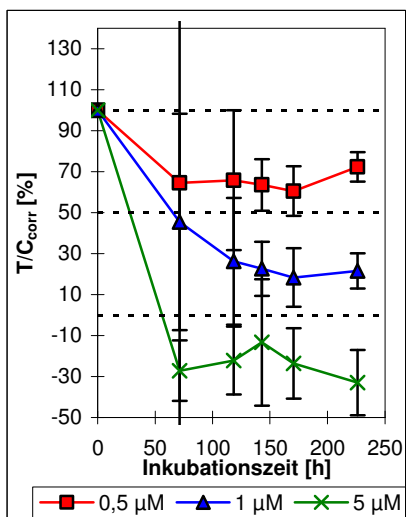
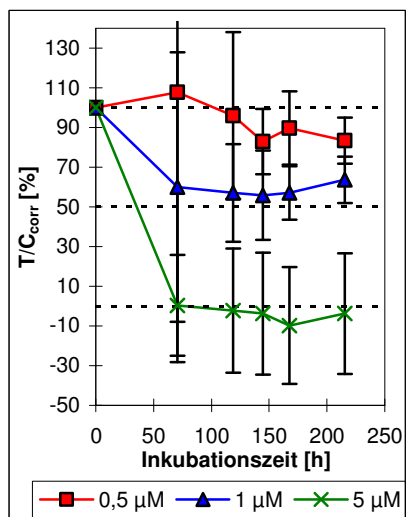
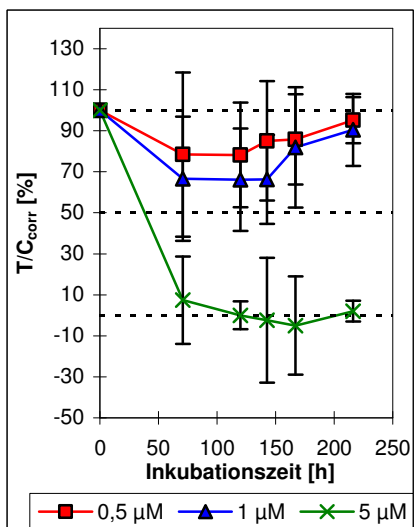
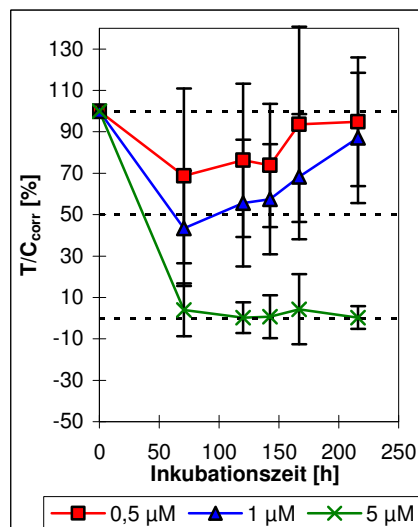
m-4F-NH<sub>2</sub>-Mal

m-4F-MeO-Mal

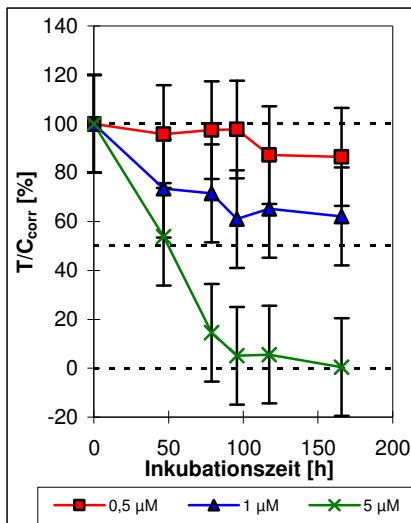
SR-4F-Ph/Et-Cl<sub>2</sub>RS-4F-Ph/Et-Cl<sub>2</sub>

RR-4F-Ph/Et-Cl<sub>2</sub>SS-4F-Ph/Et-Cl<sub>2</sub>SR-4F-Ph/iProp-Cl<sub>2</sub>RS-4F-Ph/iProp-Cl<sub>2</sub>RR-4F-Ph/iProp-Cl<sub>2</sub>SS-4F-Ph/iProp-Cl<sub>2</sub>

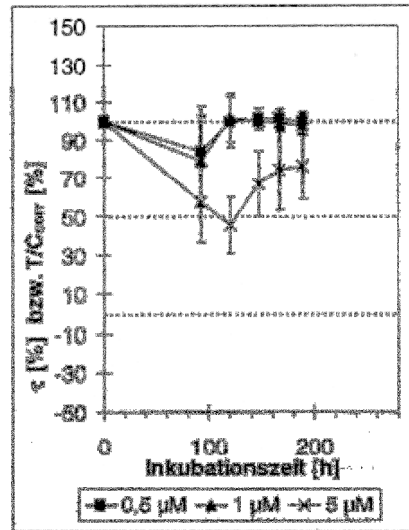
RR-4F-Ph/tBut-Cl<sub>2</sub>SS-4F-Ph/tBut-Cl<sub>2</sub>SR-Ph/Met-Cl<sub>2</sub>RS-Ph/Met-Cl<sub>2</sub>RR-Ph/Met-Cl<sub>2</sub>SS-Ph/Met-Cl<sub>2</sub>

RR-Ph/tBut-Cl<sub>2</sub>SS-Ph/tBut-Cl<sub>2</sub>RR-OH-Ph/tBut-Cl<sub>2</sub>SS-OH-Ph/tBut-Cl<sub>2</sub>RR-MeO-Ph/tBut-Cl<sub>2</sub>SS-MeO-Ph/tBut-Cl<sub>2</sub>

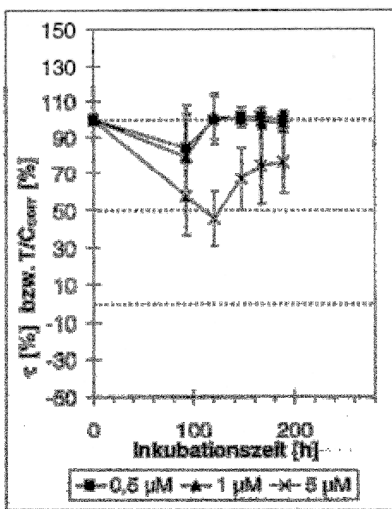
10.1.2. Testung an der MDA-MB-231-Zelllinie



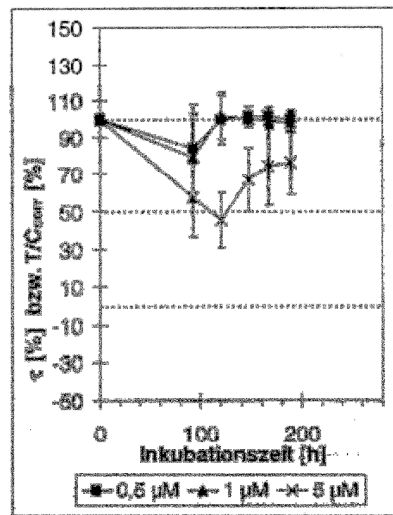
Cisplatin



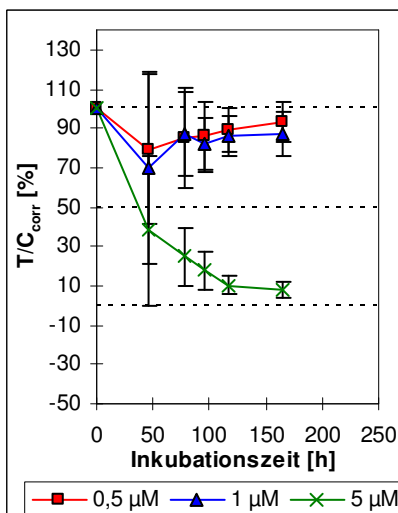
Carboplatin



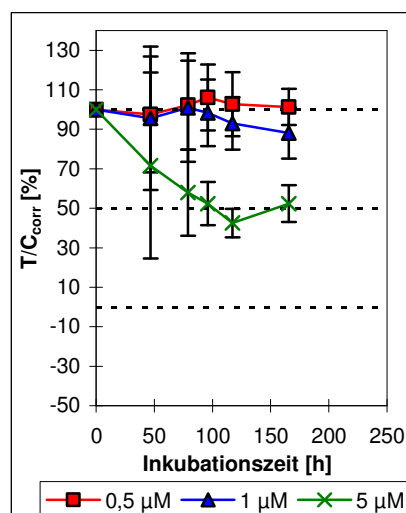
D,L-4F-Cl<sub>2</sub>



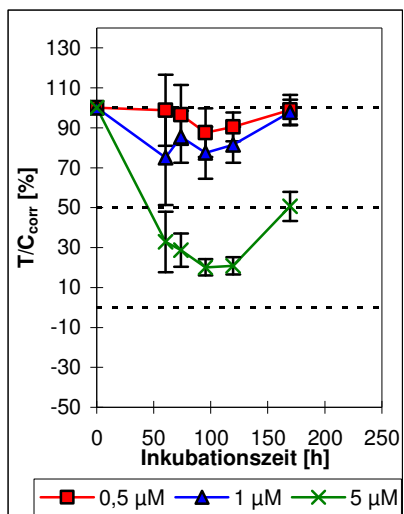
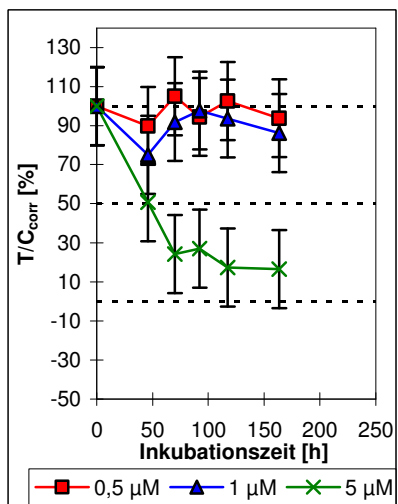
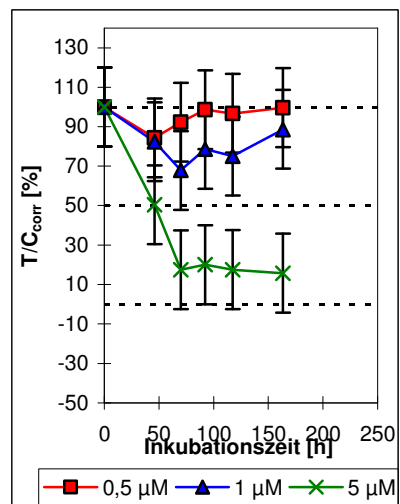
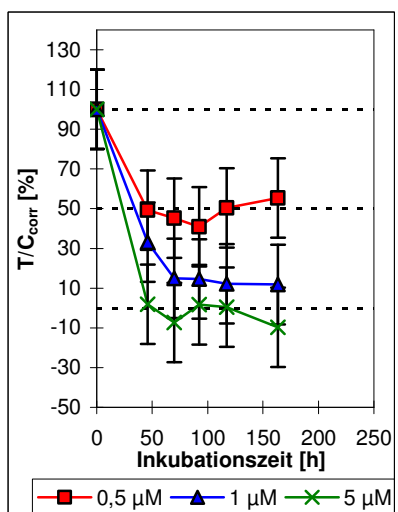
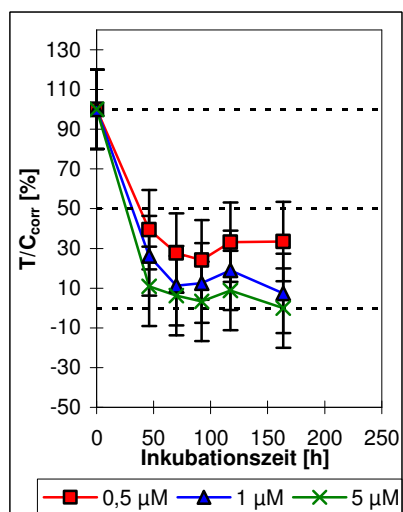
m-4F-Cl<sub>2</sub>



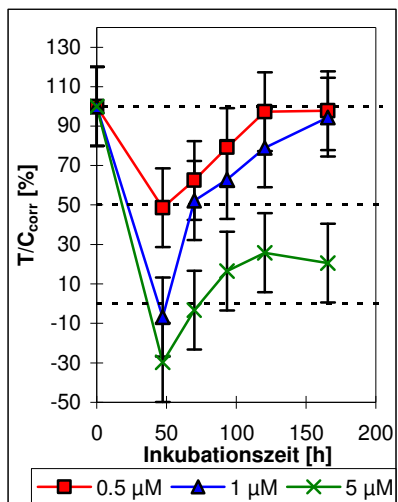
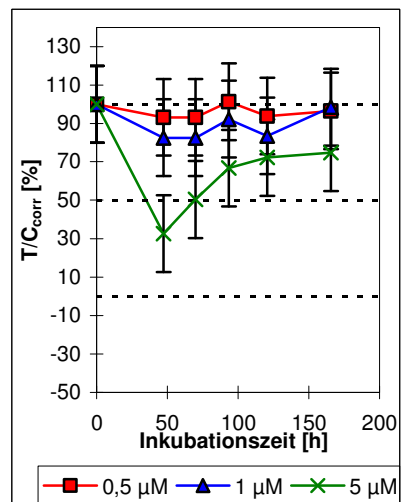
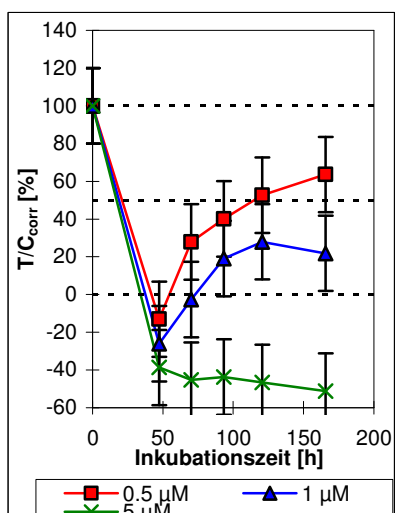
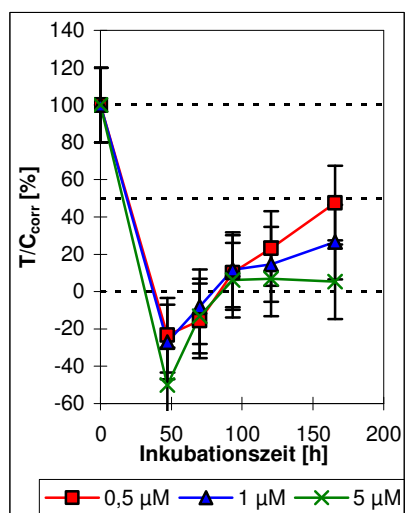
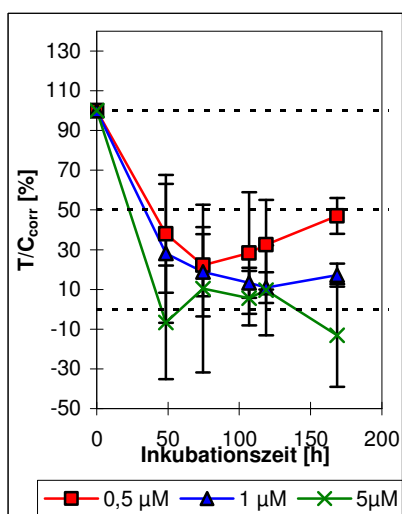
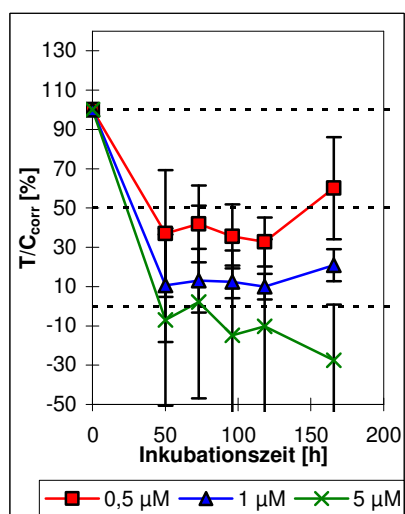
D,L-4F-OH-Mal

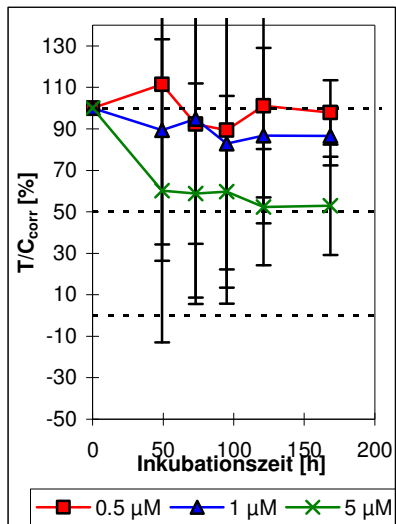
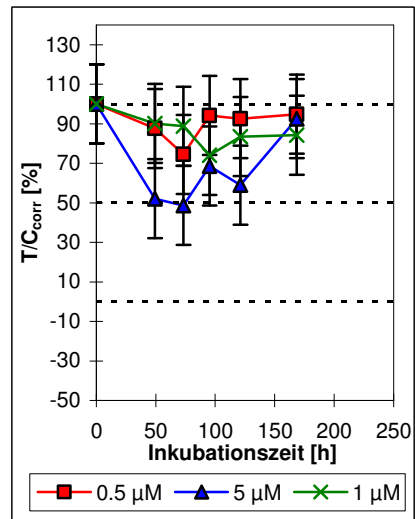
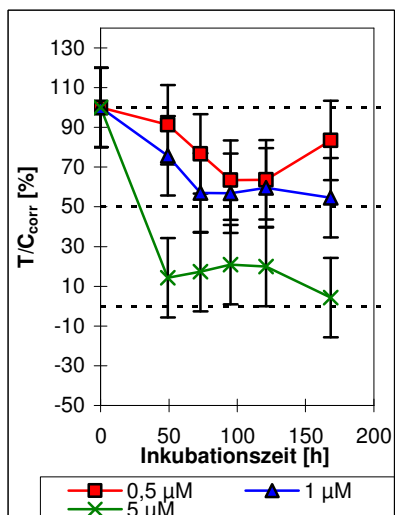
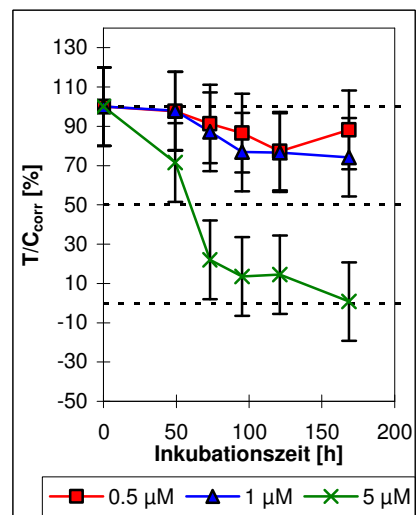
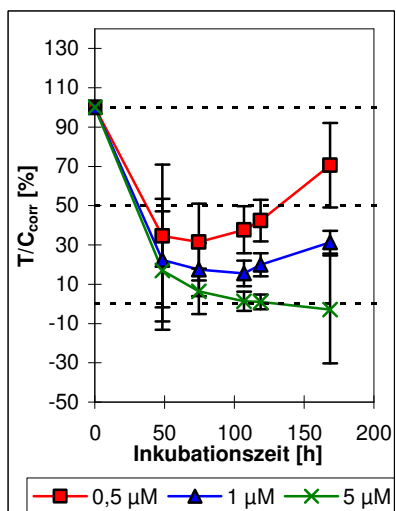
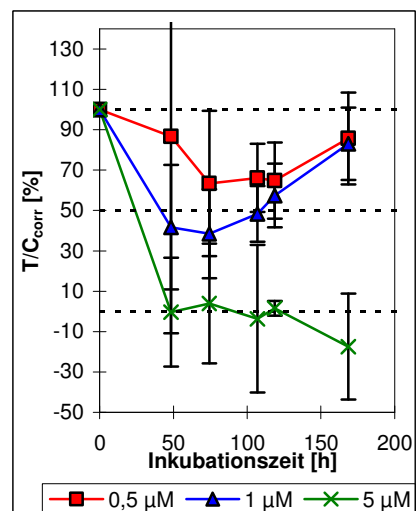


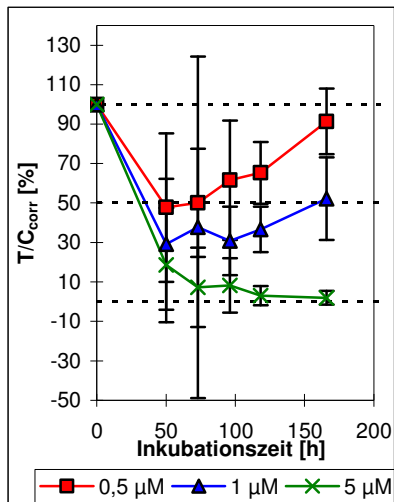
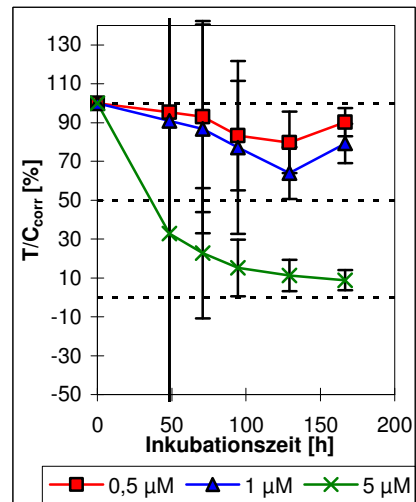
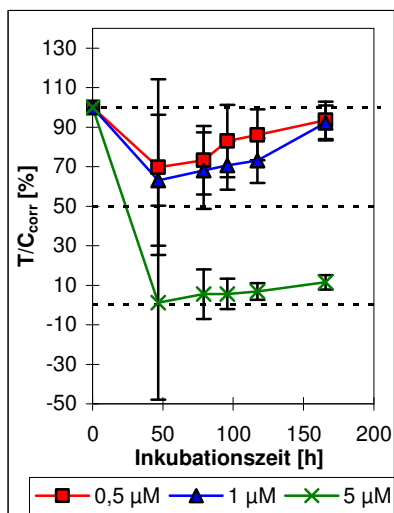
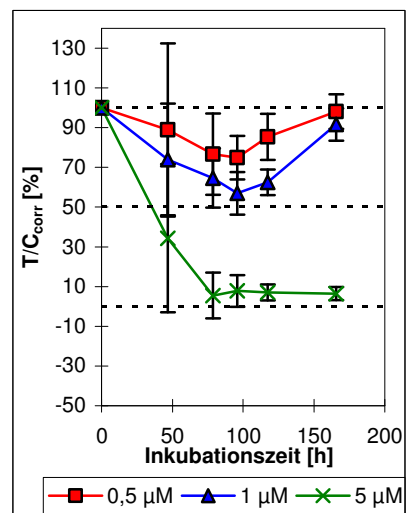
m-4F-OH-Mal

**m-4F-MeO-Mal****SR-4F-Ph/Et-Cl<sub>2</sub>****RS-4F-Ph/Et-Cl<sub>2</sub>****RR-4F-Ph/Et-Cl<sub>2</sub>****SS-4F-Ph/Et-Cl<sub>2</sub>**

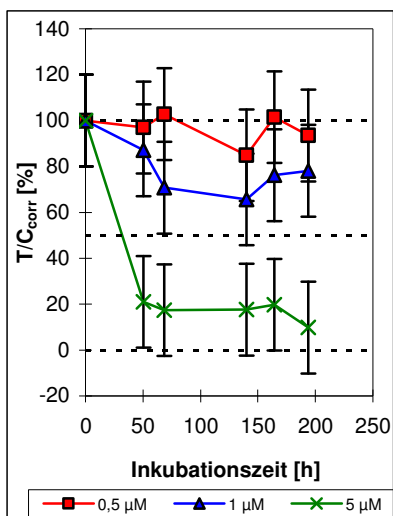


SR-4F-Ph/iProp-Cl<sub>2</sub>RS-4F-Ph/iProp-Cl<sub>2</sub>RR-4F-Ph/iProp-Cl<sub>2</sub>SS-4F-Ph/iProp-Cl<sub>2</sub>RR-4F-Ph/tBut-Cl<sub>2</sub>SS-4F-Ph/tBut-Cl<sub>2</sub>

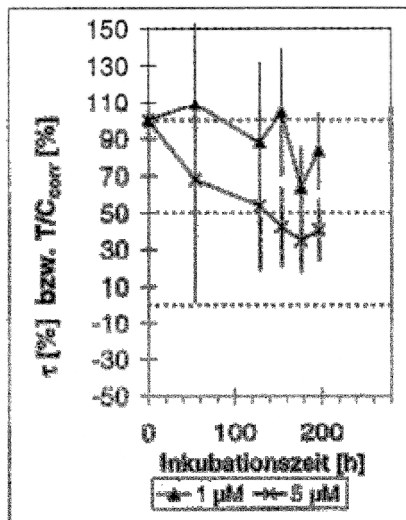
SR-Ph/Met-Cl<sub>2</sub>RS-Ph/Met-Cl<sub>2</sub>RR-Ph/Met-Cl<sub>2</sub>SS-Ph/Met-Cl<sub>2</sub>RR-Ph/tBut-Cl<sub>2</sub>SS-Ph/tBut-Cl<sub>2</sub>

RR-OH-Ph/tBut-Cl<sub>2</sub>SS-OH-Ph/tBut-Cl<sub>2</sub>RR-MeO-Ph/tBut-Cl<sub>2</sub>SS-MeO-Ph/tBut-Cl<sub>2</sub>

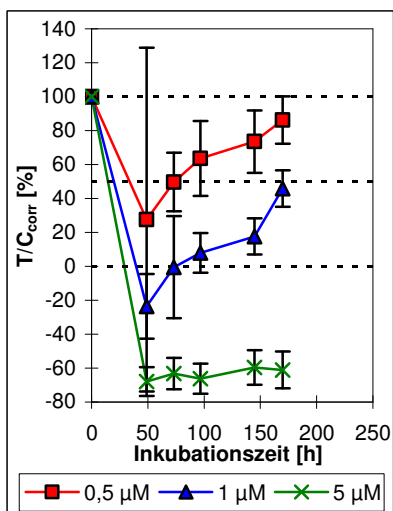
### 10.1.3. Testung an der LNCaP/FGC-Zelllinie



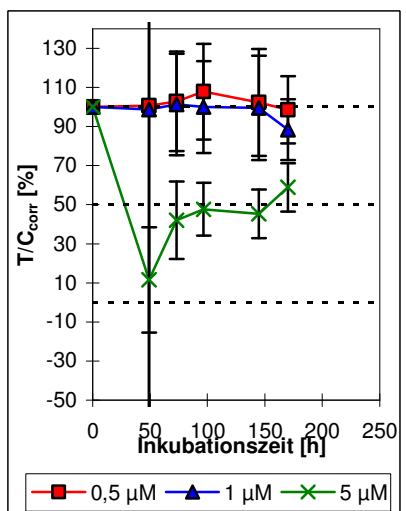
**Cisplatin**



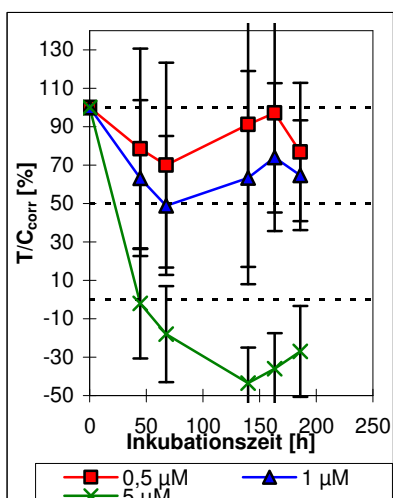
**Carboplatin**



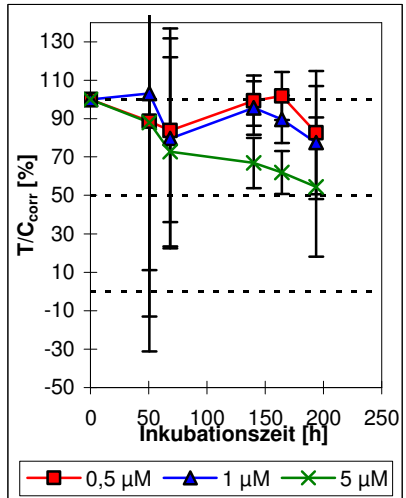
**D,L-4F-Cl<sub>2</sub>**



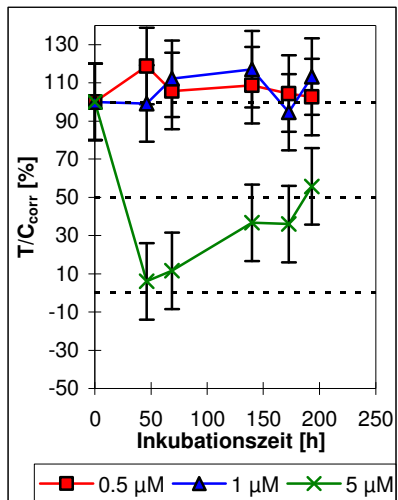
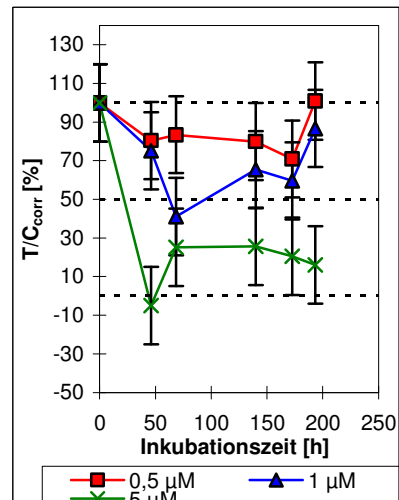
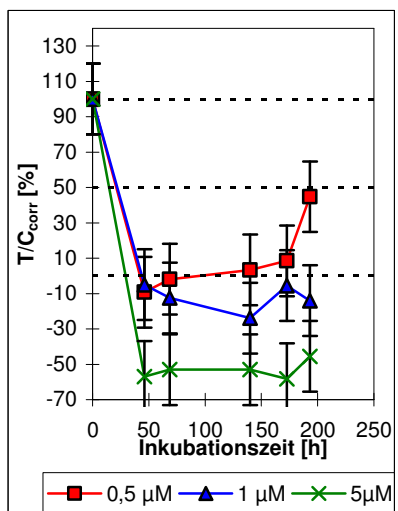
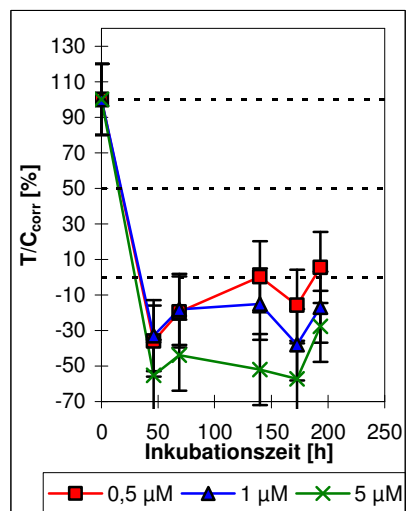
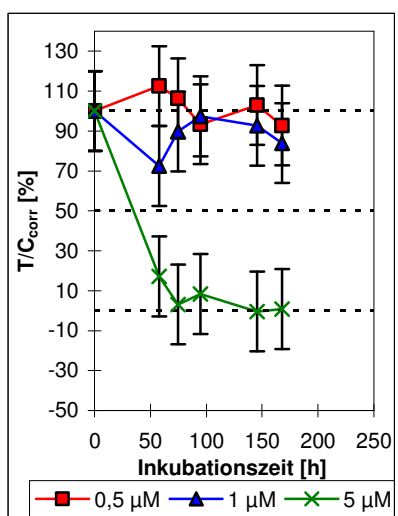
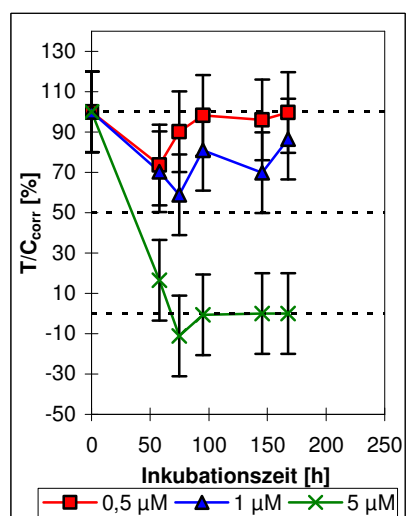
**m-4F-Cl<sub>2</sub>**

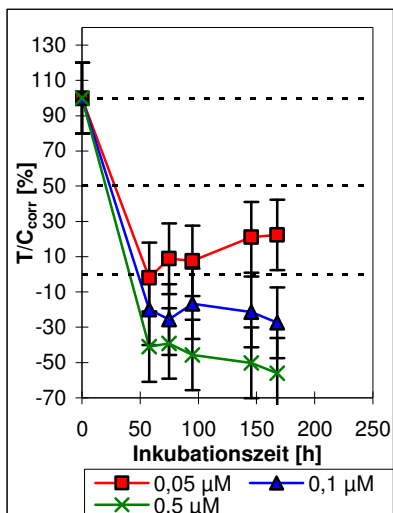


**D,L-4F-OH-Mal**

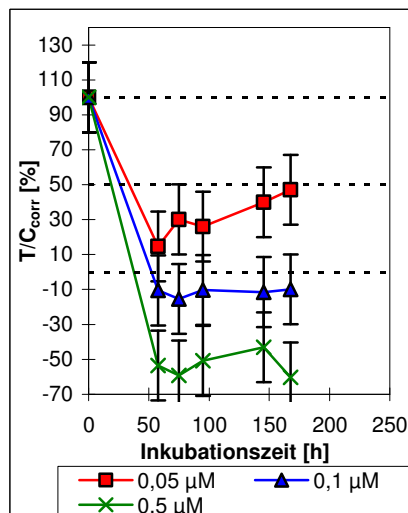


**m-4F-OH-Mal**

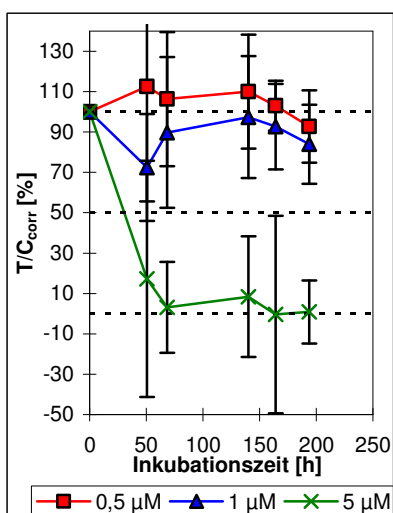
SR-4F-Ph/Et- $Cl_2$ RS-4F-Ph/Et- $Cl_2$ RR-4F-Ph/Et- $Cl_2$ SS-4F-Ph/Et- $Cl_2$ RS-4F-Ph/iProp- $Cl_2$ SR-4F-Ph/iProp- $Cl_2$



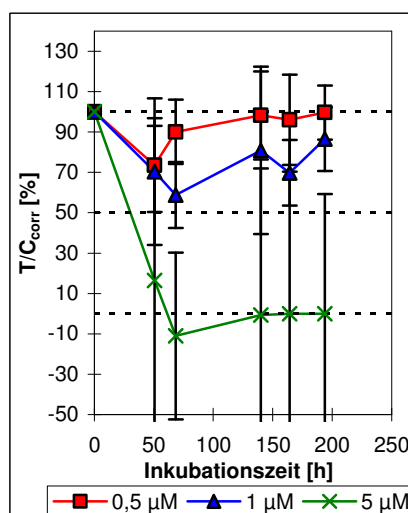
**RR-4F-Ph/iProp-Cl<sub>2</sub>**



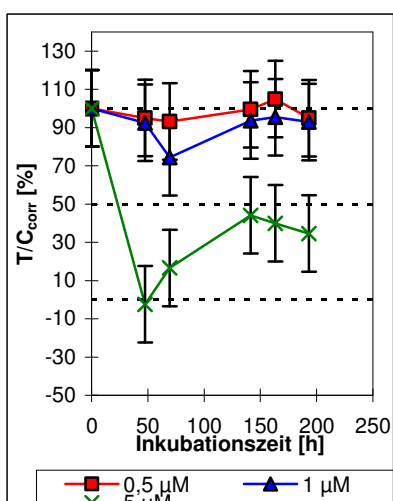
**SS-4F-Ph/iProp-Cl<sub>2</sub>**



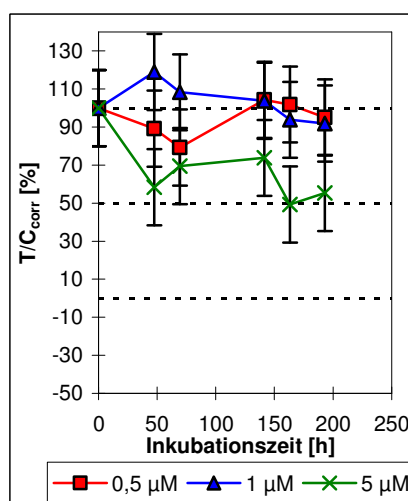
**RR-4F-Ph/tBut-Cl<sub>2</sub>**



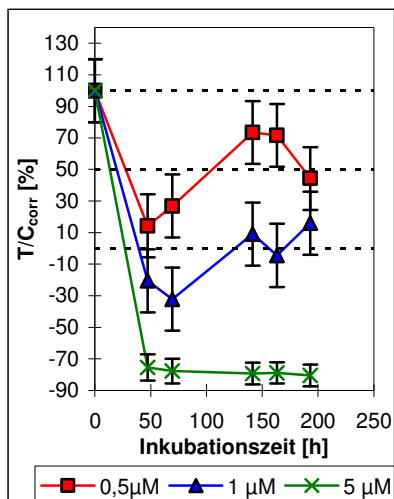
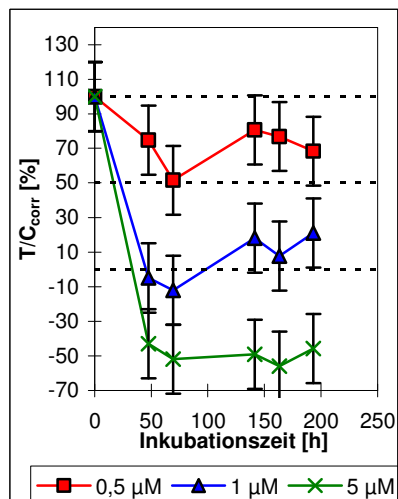
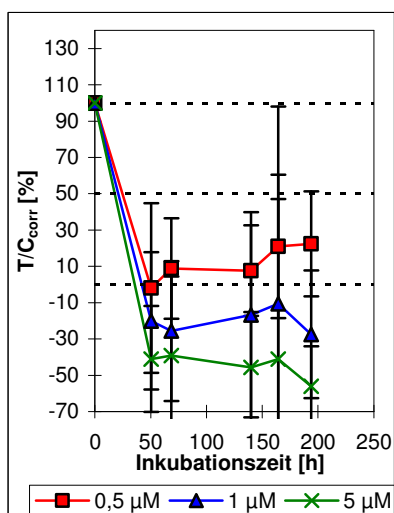
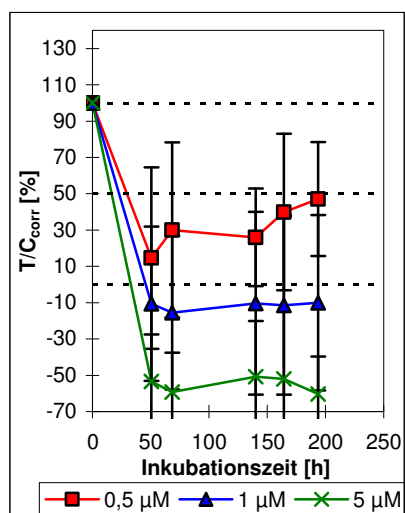
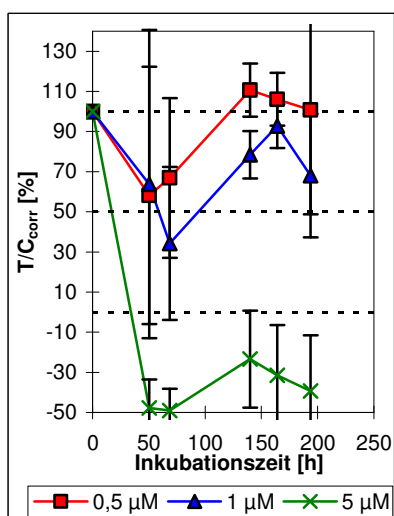
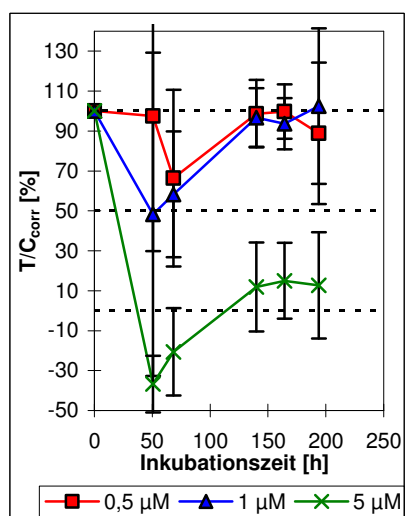
**SS-4F-Ph/tBut-Cl<sub>2</sub>**

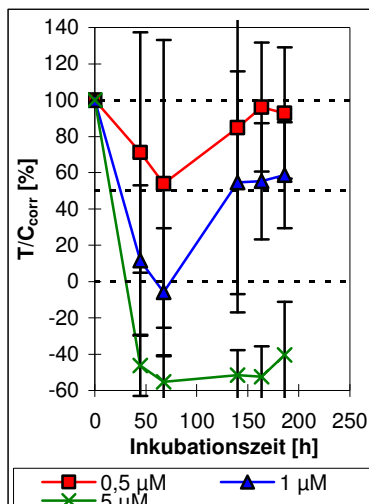
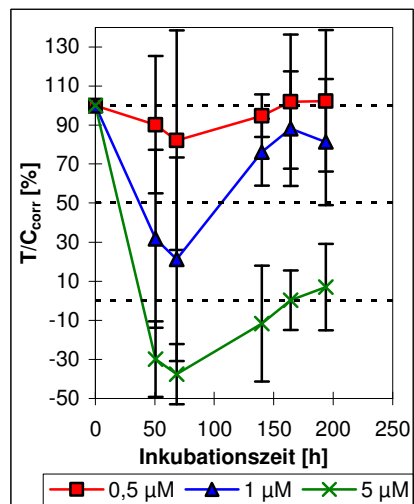


**SR-Ph/Met-Cl<sub>2</sub>**

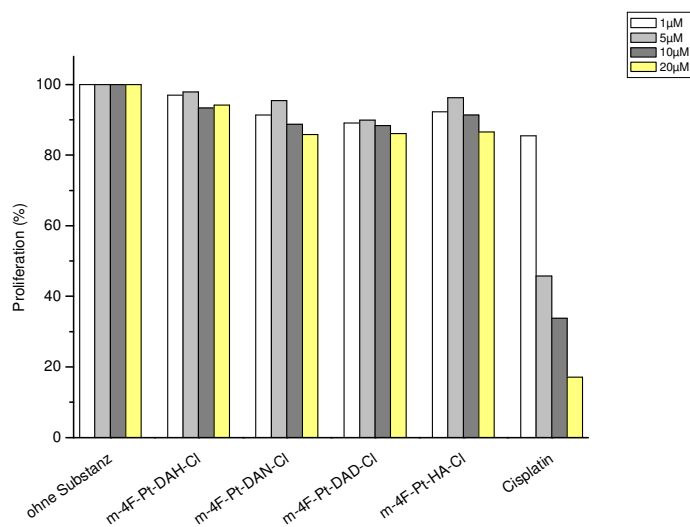


**RS-Ph/Met-Cl<sub>2</sub>**

RR-Ph/Met- $Cl_2$ SS-Ph/Met- $Cl_2$ RR-Ph/tBut- $Cl_2$ SS-Ph/tBut- $Cl_2$ RR-OH-Ph/tBut- $Cl_2$ SS-OH-Ph/tBut- $Cl_2$

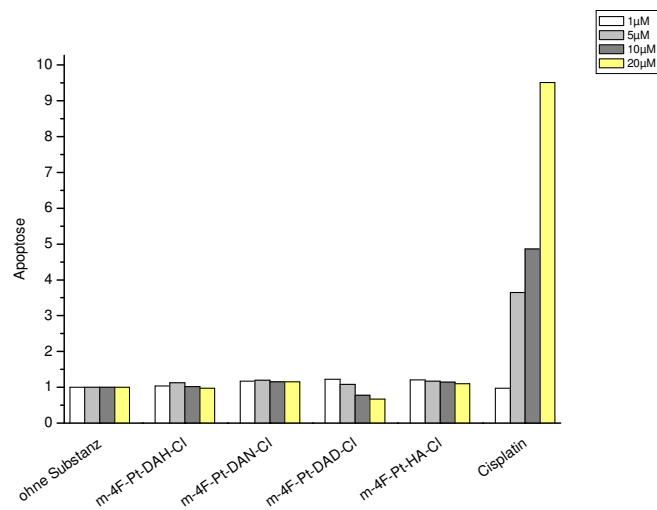
RR-MeO-Ph/tBut-Cl<sub>2</sub>SS-MeO-Ph/tBut-Cl<sub>2</sub>

## 10.2. Zytotoxizität der Platin(II)-Alkylaminkomplexe an humanen Lymphomzelllinien

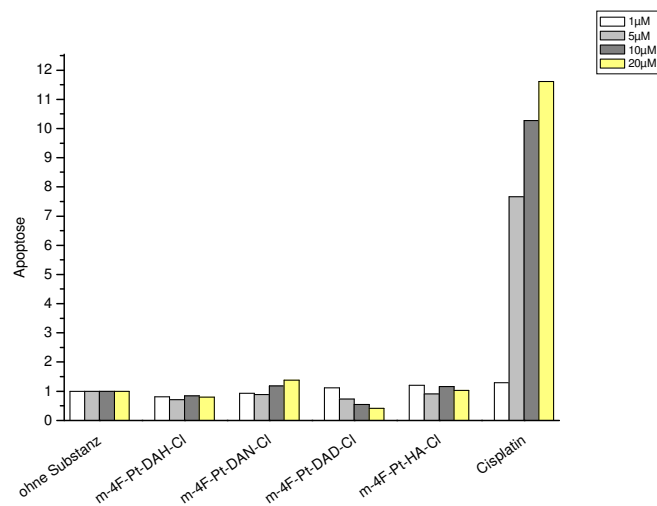


**Abb.10.1** Proliferationshemmung von Alkylaminkomplexen an K 562-Zellen (CML-Zelllinie)  
[Quelle: B.Kircher]

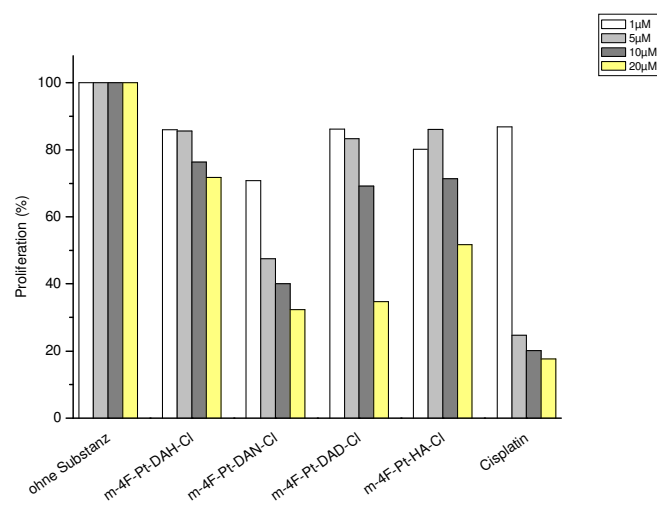




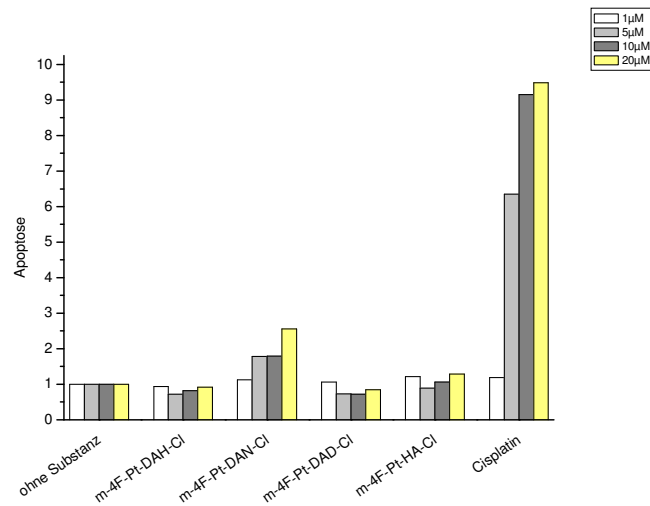
**Abb.10.2** Apoptose von Alkylaminkomplexen an K 562-Zellen [Quelle: B.Kircher]



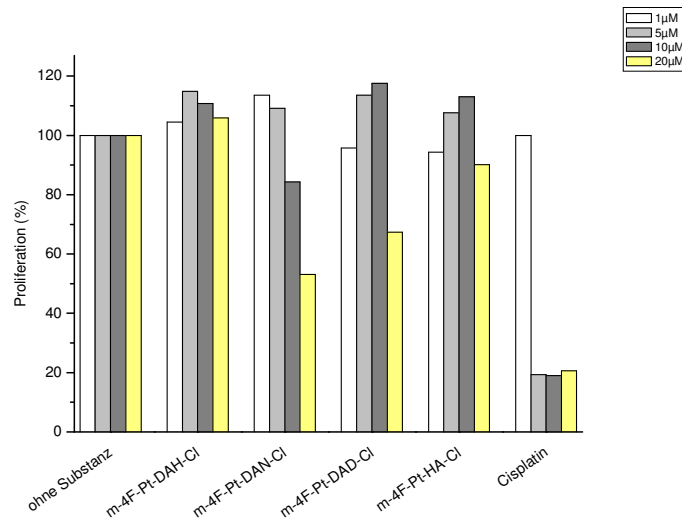
**Abb.10.3** Apoptose von Alkylaminkomplexen an LAMA-84-Zellen (CML-Zelllinie) [Quelle: B.Kircher]



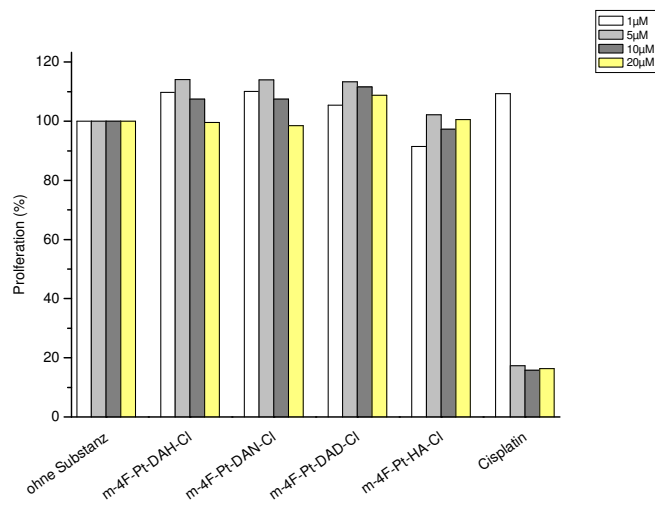
**Abb.10.4** Proliferationshemmung von Alkylaminkomplexen an RAJI-Zellen [Quelle: B.Kircher]



**Abb.10.5** Apoptose von Alkylaminkomplexen an RAJI-Zellen [Quelle: B.Kircher]



**Abb.10.6** Proliferationshemmung von Alkylaminkomplexen an BV 173-Zellen [Quelle: B.Kircher]



**Abb.10.7** Proliferationshemmung von Alkylaminkomplexen an CML-T1-Zellen [Quelle: B. Kircher]

### 10.3. Daten zur MTT-Testung an Fibroblasten und Keratinozyten

#### 10.3.1. MTT-Test an Fibroblasten

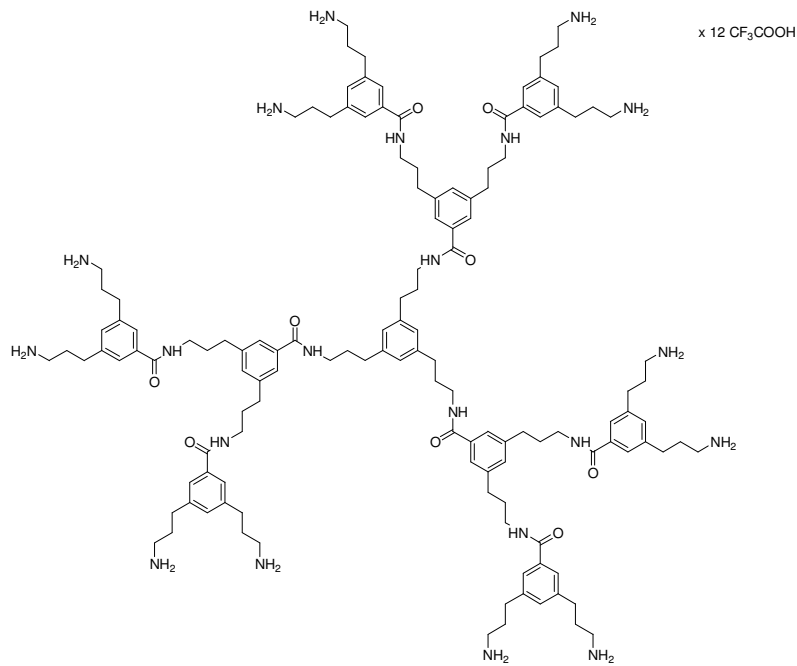
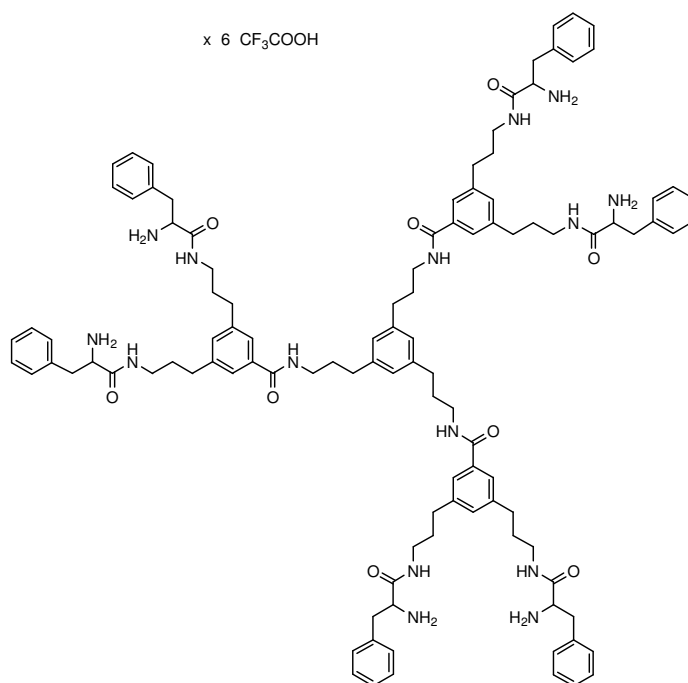
<u>Verbindung</u>	<u>Konzentration [<math>\mu</math>M]</u>	<u>Zellwachstum [%]</u>
Cisplatin	0.5	48.43
	1.0	28.96
	5.0	19.84
m-4F-PtSO <sub>4</sub>	0.5	97.58
	1.0	86.34
	5.0	75.05
D,L-4F-PtSO <sub>4</sub>	0.5	96.33
	1.0	76.09
	5.0	28.70
m-4F-PtCl <sub>2</sub>	0.5	79.57
	1.0	75.92
	5.0	54.22
D,L-4F-PtCl <sub>2</sub>	0.5	81.18
	1.0	72.90
	5.0	30.88
G <sub>0</sub> (DAP-PtI <sub>2</sub> ) <sub>2</sub> (DAP)	0.5	58.49
	1.0	48.39
	5.0	36.92
G <sub>0</sub> (DAP-PtCl <sub>2</sub> ) <sub>2</sub> (DAP)	0.5	64.96
	1.0	60.58
	5.0	52.90
D-25	1.0	63.26
	5.0	36.67
	10.0	21.31
SF-G <sub>2</sub>	1.0	18.64
	2.0	15.59
	3.0	15.49
m-Pt-DAN-Cl	10.0	64.28

**Tab.10.1** Prozentuales Wachstum ausgewählter Platin(II)-Komplexe sowie zwei Ausgangsdendrimeren an der humanen Fibroblasten-Zelllinie

**10.3.2. MTT-Test an Keratinozyten**

<u>Verbindung</u>	<u>Konzentration [<math>\mu\text{M}</math>]</u>	<u>Zellwachstum [%]</u>
Cisplatin	0.5	63.32
	1.0	48.04
	5.0	33.95
m-4F-PtSO <sub>4</sub>	0.5	90.69
	1.0	86.95
	5.0	52.51
D,L-4F-PtSO <sub>4</sub>	0.5	63.58
	1.0	23.58
	5.0	8.82
m-4F-PtCl <sub>2</sub>	0.5	69.47
	1.0	41.81
	5.0	30.63
D,L-4F-PtCl <sub>2</sub>	0.5	78.01
	1.0	60.18
	5.0	36.34
G <sub>0</sub> (DAP-PtI <sub>2</sub> ) <sub>2</sub> (DAP)	0.5	76.39
	1.0	48.54
	5.0	30.03
G <sub>0</sub> (DAP-PtCl <sub>2</sub> ) <sub>2</sub> (DAP)	0.5	74.37
	1.0	52.95
	5.0	49.92
D-25	1.0	23.33
	5.0	12.41
	10.0	11.16
SF-G <sub>2</sub>	1.0	12.49
	2.0	10.39
	3.0	8.75

**Tab.10.2** Prozentuales Wachstum ausgewählter Platin(II)-Komplexe sowie zwei Ausgangsdendrimeren an der humanen Keratinozyten-Zelllinie

**10.3.3. Formeln der im MTT-Test verwendeten Dendrimere D-25 und SF-G<sub>2</sub>****Abb.10.8** Strukturformel vom SF-G<sub>2</sub>-Ausgangsdendrimer**Abb.10.9** Strukturformel vom D-25-Ausgangsdendrimer

## 10.4. Daten zu den Reaktivitätsuntersuchungen (Ergänzung zu Kapitel 6)

### 10.4.1. Variation der Kaliumiodid-Konzentration

Verbindung	KI [mM]	pH-Wert	$k_{1,obs}$ [ $10^5 s^{-1}$ ]	$k_{2,obs}$ [ $10^5 s^{-1}$ ]
m-4F-PtCl <sub>2</sub> <sup>1</sup>	2.5	6	12.89	3.51
	5.00		14.45	3.64
	8.75		16.74	5.09
	12.5		20.99	5.84
	17.5		25.89	6.99
	25.00		30.88	8.42
RS-Ph/Met-Cl <sub>2</sub>	8.75	6	21.12	7.31
	12.5		24.52	8.02
	17.5		24.82	8.50
	25.00		28.99	9.63
SR-Ph/Met-Cl <sub>2</sub>	2.5	6	16.97	6.01
	5.00		20.76	6.54
	8.75		22.72	7.23
	12.5		25.75	7.77
	17.5		26.07	8.36
	25.00		29.18	9.43
RS-4F-Ph/Et-Cl <sub>2</sub>	2.5	6	10.24	5.63
	5.00		12.51	5.68
	8.75		15.36	5.91
	12.5		19.17	6.38
	17.5		22.82	7.26
	25.00		27.26	8.11
SR-4F-Ph/Et-Cl <sub>2</sub>	2.5	6	9.53	4.79
	5.00		10.84	4.86
	8.75		13.94	5.64
	12.5		17.17	5.92
	17.5		20.17	6.85
	25.00		25.43	7.08

Verbindung	KI [mM]	pH-Wert	$k_{1,obs}$ [ $10^5 s^{-1}$ ]	$k_{2,obs}$ [ $10^5 s^{-1}$ ]
RS-4F-Ph/iProp-Cl <sub>2</sub>	2.5	6	12.00	4.10
	5.00		14.97	4.52
	8.75		15.80	5.05
	12.5		19.79	6.62
	17.5		21.89	7.06
	25.00		27.71	8.67
SR-4F-Ph/iProp-Cl <sub>2</sub>	2.5	6	12.26	4.70
	5.00		15.22	4.75
	8.75		18.68	5.67
	12.5		20.07	6.02
	17.5		23.46	6.97
	25.00		29.08	8.86
m-4F-OH-Mal	2.5	6	1.76	18.31
	5.00		3.29	19.28
	8.75		4.57	19.6
	12.5		6.32	20.12
	17.5		7.32	20.37
	25.00		8.75	20.99
m-4F-Mal-Ester	8.75	6	8.04	19.51
	12.5		9.02	20.54
	17.5		9.12	22.88
	25.00		10.46	23.46
m-4F-MeO-Mal	2.5	6	3.77	9.28
	5.00		6.88	9.82
	8.75		10.37	9.90
	12.5		13.65	10.79
	17.5		15.62	12.81
	25.00		17.70	13.27
m-4F-AM-Mal	Nicht bestimmbar			
m-4F-NH <sub>2</sub> -Mal	Nicht bestimmbar			
m-4F-SM-Mal	Nicht bestimmbar			

<sup>1</sup>: Schnurr [110]

**Tab.10.3** Berechnete Geschwindigkeitskonstanten  $k_{1,obs}$  und  $k_{2,obs}$  bei pH 6 und 37°C

**10.4.2. Variation des pH-Wertes**

Verbindung	KI [mM]	pH-Wert	$k_{1,obs}$ [ $10^5 s^{-1}$ ]	$k_{2,obs}$ [ $10^5 s^{-1}$ ]
m-4F-OH-Mal	5.00	3.70	3.62	20.46
		4.75	4.00	21.35
		5.54	4.15	21.81
		6.00	3.29	19.6
		7.20	2.72	18.50
m-4F-MeO-Mal	5.00	3.66	8.59	11.17
		4.08	8.27	10.49
		5.54	7.20	10.68
		6.00	6.88	9.82
		7.59	6.92	10.06
m-4F-Mal-Ester	5.00	3.70	10.64	20.12
		4.75	11.03	21.06
		5.60	9.76	19.60
		6.00	7.43	18.02
		7.20	7.62	18.95
RS-4F-Ph/Et-Cl <sub>2</sub>	5.00	3.66	12.31	5.75
		5.54	12.58	5.97
		6.00	12.51	5.63
SR-4F-Ph/iProp-Cl <sub>2</sub>	5.00	3.66	15.06	4.63
		5.54	15.22	4.48
		6.00	15.22	4.75
		7.59	15.14	4.55

**Tab.10.4** Berechnete Geschwindigkeitskonstanten  $k_{1,obs}$  und  $k_{2,obs}$  bei verschiedenen pH-Werten und 37°C