

List of content:

1 General introduction:	1
1.1 Pharmaceutical relevant ingredients:	2
1.1.1 Essential oil:	2
1.1.2 Rosmarinic acid	2
1.2 Breeding of lemon balm:	3
1.3 The Project underlying this thesis:	4
1.4 Basis of breeding in <i>Melissa officinalis</i> :	5
1.5 Objectives:	6
2 Chromosome number and ploidy level of balm (<i>Melissa officinalis</i>):	7
3 Evaluation of 28 balm and lemon balm (<i>Melissa officinalis</i>) accessions for content and composition of essential oil and rosmarinic acid:	13
4 Content and composition of essential oil and content of rosmarinic acid in lemon balm and balm genotypes (<i>Melissa officinalis</i>):	26
5 General Discussion:	37
5.1 Breeding-strategies in balm:	37
5.2 Variability of the content and the composition of the essential oil of balm and lemon balm:	38
5.3 Subspecies:	40
5.4 Differences in signal strength of fluorescence <i>in situ</i> hybridisation	42
6 Conclusions:	43
7 Summary:	45
7.1 Summary:	45
7.2 Zusammenfassung:	46
8 Electronical supplements:	47
9 References:	62

10 Acknowledgement:	66
11 Curriculum vitae:	67
11.1 Peer-reviewed publications:	68
11.2 Co authorships:	68
11.3 Posters:	69
11.4 Scientific talks:	69
12 Eidesstattliche Erklärung / Declaration under Oath:	71