



TABLE OF CONTENTS

Summary	5
Zusammenfassung	9
Chapter 1 Introduction	13
Thermoregulation as adaptive mechanism in endothermic animals	16
Torpor and hibernation: a specific thermoregulatory and metabolic adaptation	24
Specific physiological changes in the horse	26
Scope of thesis	30
References	32
Chapter 2 Adaptation strategies to seasonal changes in environmental conditions of a domesticated horse breed, the Shetland pony (<i>Equus ferus caballus</i>)	39
Chapter 3 Long-term feed restriction of Shetland pony mares (<i>Equus ferus caballus</i>) under outdoor winter conditions: Effects on body condition and related indices of health	67
Chapter 4 Equilibration times of the isotopes ¹⁸O, Deuterium and Tritium in animal studies. A meta analysis.	89
Chapter 5 Seasonal changes in total body water and water intake of Shetland ponies measured by isotope dilution technique under extensive housing and feed restriction	129
Chapter 6 General discussion	149
Interspecies comparison	
Adaptation strategies of different herbivores to feed shortage	151
Water intake of domesticated herbivores	156
Nocturnal hypometabolism	162
The year round outdoor housing of horses under welfare aspects	169
Conclusions	174
References	176