



DAFTAR ISI

HALAMAN SAMPUL	i
HALAMAN JUDUL	ii
HALAMAN PERSETUJUAN	iii
HALAMAN PENGESAHAN	iv
PERNYATAAN	v
PRAKATA	vi
DAFTAR ISI	x
DAFTAR TABEL	xi
DAFTAR GAMBAR	xiii
DAFTAR LAMPIRAN	xiv
Abstract	xv
Intisari	xvi
Chapter 1. Pendahuluan Umum	17
Chapter 2. <i>In Vitro</i> Anthelmintic Activity of <i>Chaetomorpha vieillardii</i> Ethanolic Extract Against Adult Worm Motility and Egg-Hatching of <i>Haemonchus contortus</i> from Sheep	48
Chapter 3. Molecular Identification, Chemical Composition, and <i>In Vitro</i> Anthelmintic Activity of <i>Sargassum duplicatum</i> Against <i>Haemonchus contortus</i>	72
Chapter 4. Harnessing <i>Acanthophora spicifera</i> Macroalgal Extract for Novel <i>Haemonchus contortus</i> Control in Sheep	92
Chapter 5. <i>In Vivo</i> Assessment of <i>Chaetomorpha vieillardii</i> Ethanolic Extract as a Natural Anthelmintic and Coccidiostat in Sheep.....	123
Chapter 6. Diskusi Umum	159
Kesimpulan dan Saran	185
Ringkasan	187
Lampiran	191



DAFTAR TABEL

Tabel 1. Chemical compositions of macroalgae <i>C. vieillardii</i>	56
Tabel 2. Color determination of macroalgae <i>C. vieillardii</i>	57
Tabel 3. Macro and micromineral composition of macroalgae <i>C. vieillardii</i>	57
Tabel 4. Flavonoids and phenols content of macroalgae <i>C. vieillardii</i> ethanolic extract.....	57
Tabel 5. Motility of <i>H. contortus</i> (%) due to treatments during observation.....	59
Tabel 6. Chemical composition of brown macroalgae <i>S. duplicatum</i> originating from Gunungkidul Regency, Yogyakarta Special Region, Indonesia	80
Tabel 7. Observation times for lethal dose treatment of <i>S. duplicatum</i> on <i>H.</i> <i>contortus</i>	80
Tabel 8. The chemical composition of <i>A. spicifera</i>	101
Tabel 9. Macromineral, micromineral, and heavy metal composition of <i>A.</i> <i>spicifera</i> subjected to freeze-drying at -50°C, presented in elemental and oxide forms	102
Tabel 10. Color determination of fresh <i>A. spicifera</i> , freeze-dried at -50°C, and oven-dried at 40°C.....	103
Tabel 11. Yield and secondary metabolite composition of <i>A. spicifera</i> Macroalga.....	103
Tabel 12. <i>H. contortus</i> motility in response to anthelmintic treatment at different incubation periods	104
Tabel 13. Morphological response of <i>H. contortus</i> cuticle following different treatments.....	108
Tabel 14. The chemical composition of experimental feed ingredients on a dry matter basis	130
Tabel 15. Feed formulation (DM basis)	130
Tabel 16. Freeze-drying (-50°C) yield and secondary metabolite profile of <i>C.</i> <i>vieillardii</i> macroalgae	133
Tabel 17. Fecal egg counts (EPG) in logarithmic form [Log (EPG+k)] of <i>H.</i> <i>contortus</i> nematode parasites in thin-tailed sheep at each observation week.....	135
Tabel 18. Log-transformed OPG counts [Log (OPG + k)] of <i>Eimeria</i> spp. protozoan parasites in the feces of thin-tailed sheep during each week of observation.....	138
Tabel 19. The hematological profile of thin-tailed sheep before and after treatment	139
Tabel 20. Nutrient intake and digestibility in thin-tailed sheep (expressed as % of dry matter basis)	140
Tabel 21. Initial and final body weight, total body weight gain, and average daily gain in sheep	141
Tabel 22. Kelimpahan populasi makroalga di Pantai Sepanjang, Kabupaten Gunungkidul selama tahun 2023	160
Tabel 23. Komposisi kimia berbagai jenis makroalga tropis yang dikeringkan pada suhu -50°C	161
Tabel 24. Komposisi kimia berbagai jenis makroalga tropis yang dikeringkan pada suhu 40°C	162
Tabel 25. Komposisi mineral makro, mikro, dan logam berat dari berbagai jenis makroalga tropis yang dikeringkan pada suhu -50°C di Kabupaten Gunungkidul	163



Tabel 26. Rendemen ekstrak dan metabolit sekunder dari berbagai jenis makroalga tropis dengan pelarut etanol 96%	164
Tabel 27. Komposisi persentase senyawa kimia dalam ekstrak etanol makroalga <i>A. spicifera</i>	167
Tabel 28. Komposisi persentase senyawa kimia dalam ekstrak etanol makroalga <i>S. duplicatum</i>	170
Tabel 29. Komposisi persentase senyawa kimia dalam ekstrak etanol makroalga <i>C. vieillardii</i>	172
Tabel 30. Efek langsung dan tidak langsung dari metabolit sekunder <i>C. vieillardii</i> terhadap parasit dan domba.....	180



DAFTAR GAMBAR

Gambar 1. Siklus hidup dari <i>H. contortus</i> worm (Palevich <i>et al.</i> , 2022)	23
Gambar 2. Tahapan penelitian dalam pengembangan makroalga tropis sebagai antiparasit alami untuk ruminansia	37
Gambar 3. Layout disertasi	38
Gambar 4. The Maximum-likelihood phylogenetic tree based on DNA sequences from the samples of <i>Chaetomorpha</i> sp.	56
Gambar 5. AWMT from the ethanol extract of <i>C. vieillardii</i> against <i>H. contortus</i> at levels of 2 mg/mL, 4 mg/mL, and 6 mg/mL <i>in vitro</i>	58
Gambar 6. EHIT from the ethanol extract of <i>C. vieillardii</i> against <i>H. contortus</i> at levels of 2 mg/mL, 4 mg/mL, and 6 mg/mL <i>in vitro</i>	60
Gambar 7. Phylogenetic tree of <i>S. duplicatum</i> species based on molecular DNA analysis	79
Gambar 8. AWMT data of <i>H. contortus</i> motility due to administration of <i>S. duplicatum</i> extract at different concentration levels	81
Gambar 9. EHIT data (\pm standard deviation) of <i>H. contortus</i> egg hatch failure due to administration of <i>S. duplicatum</i> extract at different concentration level	82
Gambar 10. Significant interaction between extract concentration levels and observation time on <i>H. contortus</i> motility (%)	106
Gambar 11. EHIT of ethanolic <i>A. spicifera</i> extract on <i>H. contortus</i> eggs	107
Gambar 12. Percentage of EPG (Log (EPG+1)) in thin-tailed sheep as affected by treatments	134
Gambar 13. <i>H. contortus</i> nematode eggs (indicated by white circles) observed in the feces of thin-tailed sheep under 100x magnification	135
Gambar 14. Percentage of OPG (Log (OPG+1)) in thin-tailed sheep as affected by treatments	136
Gambar 15. Microscopic appearance of 15 oocysts of <i>Eimeria</i> spp. (A) at 100x magnification, alongside a single egg of <i>H. contortus</i> (B) observed in the feces of thin-tailed sheep	137
Gambar 16. Lokasi koleksi makroalga, ditandai dengan tanda bintang hijau	159
Gambar 17. Beragam spesies makroalga yang ditemukan di Pantai Sepanjang, Kabupaten Gunungkidul, D.I. Yogyakarta	160
Gambar 18. Kromatogram GC-MS dari ekstrak etanol <i>A. spicifera</i>	165
Gambar 19. Kromatogram GC-MS dari ekstrak etanol <i>S. duplicatum</i>	169
Gambar 20. Kromatogram GC-MS dari ekstrak etanol <i>C. vieillardii</i>	174
Gambar 21. Persiapan <i>C. vieillardii</i> dari biomassa segar hingga siap diberikan pada domba	177
Gambar 22. Jumlah eosinofil ($10^3/\mu\text{L}$) sebelum dan sesudah perlakuan	179
Gambar 23. Infografik mengenai permasalahan, sumber daya, tindakan, luaran, dan dampak dari disertasi ini	181



DAFTAR LAMPIRAN

Lampiran 1. Sertifikat Klirens Etik Nomor 005/KE.02/SK/01/2023.....	191
Lampiran 2. Sertifikat Klirens Etik Nomor 012/KE.02/SK/01/2024.....	192
Lampiran 3. Halaman Judul dari Paper yang Terbit di Jurnal Veterinary Integrative Sciences	193
Lampiran 4. Halaman Judul dari Paper yang Terbit di Jurnal Tropical Animal Science Journal	194
Lampiran 5. Bukti Penerimaan Submit Paper di Jurnal Veterinary Parasitology	195