Table 10.1: Phytochemical investigations of the genus *Cryptocarya*

(*Note:* for additional alkaloid investigations and essential oil studies see also Tables 9.1 and 9.2)

Activity		
Species (distribution)	Phytochemical studies	References
Anti-inflammatory		
Cryptocarya chingii (China)	Anti-inflammatory flavonoids	Feng et al. (2012)
Cryptocarya concinna (China)	Anti-inflammatory components isolated eg. cryptoconcatones (lactones)	Yang et al. (2016)
Cryptocarya rugulosa (India)	Anti-inflammatory, immunomodulatory potential: rugulactone (inhibitor of the nuclear factor αB activation)	Tyrikos-Ergas et al. (2018)
Cryptocarya latifolia, C. myrtifolia, C. transvaalensis, C. woodii, C. wylei (Africa)	Bark extracts (substitute for *Ocotea bullata*): treatment of headache; anti-inflammatory and analgesic potential	Zschocke & van Staden (2000); Hamza et al. (2016)
Cryptocarya transvaalensis (South Africa)	Anti-asthmatic: used in traditional medicine with good clinical reports; also used for treatment of rhinitis; suggesting anti-inflammatory and antispasmodic activity	Semenya & Maroyi (2018a & 2018b)
Antimicrobial activity		
Cryptocarya alba (South America, Chile)	Antifungal: essential oil active against honeybee fungus (*Nosema ceranae*); active components were α-terpineol, eucalyptol or β- phellandrene; the essential oil was more effective and non-toxic to Honey bees (*Apis mellifera*)	Bravo et al. (2017)
	Antibacterial, anti-yeast: essential oil (α-terpineol 25%, eucalyptol 22%) was active against *Staphylococcus aureus, Escherichia coli, Candida albicans, Helicobacter pylori*	Touma et al. (2020)
	Antibacterial (fruit extracts): antibiofilm against *Pseudomonas aeruginosa*	Viktorova et al. (2020)
Cryptocarya aschersoniana (South America, Brazil)	Essential oil: anti-inflammatory combination with conventional drugs (ie. terbinafine) for topical treatment of fungal skin infections	Maciel et al. (2019)

Cryptocarya impressa (Southeast Asia: Vietnam, Laos, Malay Peninsula, Borneo, Sumatra)	Antifungal: leaf essential oil showed excellent anti-Candida activity	Chau et al. (2020)
Cryptocarya latifolia (Africa)	Medicinal: ground bark mixed with crocodile fat to treat chest ailments	Lall & Meyer (1999)
	Medicinal: substitute for *Ocotea bullata* for the treatment of headache, morning sickness, respiratory disorders, tuberculosis, bacterial and fungal infections	Zschocke & van Staden (2000); Hamza et al. (2016)
	Anti-tuberculosis potential: active against *Mycobacterium tuberculosis*	Lall & Meyer (1999)
Cryptocarya rugulosa (India)	Antibacterial components: rugulactone and derivatives were active against a range of bacteria and fungi	Meragelman et al. (2009); Reddy et al. (2010); Nodwell et al. (2012)
Cryptocarya chinensis (China)	Anti-tuberculosis potential: flavanones (pinocembrin, cryptocaryone) show activity against *Mycobacterium tuberculosis*	Chou et al. (2011)
Antiviral activity		
Cryptocarya chartacea (New Caledonia)	Antiviral flavanones: active against dengue virus	Allard et al. (2011)
Cryptocarya chinensis (China)	Dehydroantofine: strong anti-HIV activity	Wu et al. (2012)
Antiparasitic studies		
Cryptocarya alba (South America)	Fruit extract: cryptofolione was cytotoxic, also antiparasitic against *Trypanosoma cruzi* and *Leishmania* spp.	Schmeda-Hirschmann et al. (2001)
Cryptocarya aschersoniana (South America, Brazil)	Essential oil (leaf): significant anti-leishmania activity	Andrade et al. (2018)
Cryptocarya moschata (South America)	Complex chemistry: cryptofolione present	Cavalheiro & Yoshida (2000)
Cryptocarya nigra (Malaysia)	Antimalarial: N-methylisococlaurine and atherosperminine showed strong antiplasmodial and antioxidant activity; 2-hydroxy-atherosperminine was also antiplasmodial.	Nasrullah et al. (2013)
Cryptocarya novoguineensis (Papua	Anthelmintic: goniothalamin showed goo0d activity against Barber's pole	Herath et al. (2019)

New Guinea)	worm (*Haemonchus contortus*)	
Cryptocarya obovata (Australia)	Antiparasitic: trypanocidal α-pyrone isolated	Davis et al. (2010)
Cryptocarya rigidifolia (Madagascar)	Antiparasitic: α-pyrones with antimalarial potential isolated	Liu et al. (2015)
Cardioactive properties		
Cryptocarya chinensis (China)	Alkaloids: rich alkaloid resource e.g. caryachine (anti-arrhythmic) and crychine (vasorelaxant), discovered in 1966	Lu & Lan (1966); Ko et al. (1993); Wu et al. (1995); Chen et al. (1996)
Cryptocarya laevigata (Australia, Papua New Guinea)	Extract: good hypotensive, analgesic and antipyretic actions	Collins et al. (1990)
Neurological potential		
Cryptocarya bidwillii (Australia)	Alkaloid: nervous system effects (adrenergic blocking activity)	Collins et al. (1990)
Cryptocarya griffithiana (Malaysia)	Alkaloids: anticholinesterase activity eg. 2-methoxyatherosperminine; reticuline also present	Wan Othman et al. (2016)
Cryptocarya laevigata (Australia, Papua New Guinea)	Anticonvulsant: good activity	Collins et al. (1990)
Antidiabetic properties		
Cryptocarya rubra (Hawaii)	Cryptocaryone: inhibition of glucose transport, suggesting antidiabetic potential	Ren et al. (2014)
Anticancer studies		
Cryptocarya alba (South America, Chile)	Phenolics (flavonoids, anthocyanins): antioxidant and anti-mutagenic properties attributed	Carmona et al. (2017)
	Anticancer: active in various cancer cell lines eg. glioblastoma, breast, kidney	Touma et. al. (2020)
Cryptocarya brachythyrsa (China)	Cytotoxic lactones identified	Fan et al. (2019)
Cryptocarya chinensis (China)	Cytotoxic: flavonoids (infectocaryone, cryptocaryanone) and alkaloids (antofine, dehydroantofine)	Chou et al. (2010); Wu et al. (2012)
Cryptocarya concinna (China)	Antiproliferative: extracts and cryptocaryone showed activity against oral cancer cells	Huang et al. (2014); Chang et al. (2016a); Chang et al. (2016b); Yang et al. (2017)
	Anticancer: cryptoconcatones also present; synergistic anticancer activity with radiotherapy (UVC)	

Cryptocarya costata (Indonesia)	Cytotoxic: chalcones isolated	Usman et al. (2006)
Cryptocarya densiflora	Alkaloids with anti-metastatic activity are present ie. laurotetanine; other bioactive alkaloids also present eg. nornantenine, desmethylsecoantofine, oridine	Wan et al. (2011); Wan Othman et a. (2016)
Cryptocarya impressinervia (China)	Cytotoxic lignans identified	Xiong et al. (2021)
Cryptocarya infectoria (Southeast Asia: Indo-China, Malesia)	Cytotoxic components isolated: dihydrochalcones (ie. cryptocaryone and infectocaryone)	Chen et al. (2007)
	Cytotoxic flavonoids are present ie. cryptocaryanones A and B (methanol bark extract)	Dumontet et al.(2001)
	Alkaloids: bioactive alkaloids are present (bark extracts) ie. N-methyllaurotetanine (anti-tumour, anti-metastatic); also atherosperminine, N-methylisococlaurine	Wang et al. (2011); Wan Othman et al. (2016)
Cryptocarya konishii (Southeast Asia)	Anti-leukaemic: caryone derivatives	Kurniadewi et al. (2010)
Cryptocarya laevigata (Australia, Papua New Guinea)	Antiproliferative: neocaryachine shows activity in various cancer cell lines	Suzuki et al. (2017)
Cryptocarya massoia (Southeast Asia, PNG)	Massoia lactones and analogues: anti-inflammatory and cytotoxic potential	Barros et al. (2014)
Cryptocarya maclurei (China)	Cytotoxic: cryptomaclurone (flavonoid) shows moderate activity	Feng et al. (2013)
Cryptocarya obovata (Australia)	Cytotoxic: flavonoids and α-pyrones are present	Dumontet et al. (2004)
Cryptocarya pleurosperma (Australia)	Cytotoxic alkaloid: cryptopleurine isolated in 1948; highly toxic with potent anticancer activity	Collins et al. (1990)
Cryptocarya rubra (Hawaii)	Cytotoxic: cryptocaryone	Ren et al. (2014)
Cryptocarya rugulosa (India)	Anticancer: rugulactone showed activity against human lymphoma cell lines	Meragelman et al. (2009); Tyrikos-Ergas et al. (2018)
Cryptocarya sp. (PNG):	Anti-tumour activity: caryptocaryols	Grkovic et al. (2011)
Cryptocarya yunnanensis (China)	Anticancer: cytotoxic components eg. cryptoyunnanes	He et al. (2020 & 2021)

Insecticidal studies		
Cryptocarya alba (South America, Chile)	Alkaloids eg. boldine, coclaurine, laurolitsine, pukateine with insecticidal properties	Quiroz-Carreno et al. (2020)
Cryptocarya infectoria (Southeast Asia: Indo-China, Malesia)	Essential oil (leaf): primary components germacrene D (55.5%) and bicyclogermacrene (11%); remarkable mosquito larvicidal activity	Chau et al. (2020)
Environmental remediation		
Cryptocarya alba (South America)	Leaf extract with silver nanoparticles: excellent catalyst candidate for degradation of blue methylene dye pollutant in chemical industries	Recio-Sanchez et al. (2019)

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