

Screening of Chilean Plants for Anticancer Activity. I.

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ABSTRACT.—Extracts prepared from 519 samples of plant material were evaluated for anticancer activity against the usual systems. The results of the antitumor testing showed that 156 of these extracts gave initial indications of anticancer activity in one or more tumor systems. The activity was confirmed in 14 samples.

In connection with our research program dealing with the chemistry of the Chilean flora (1-3) a screening program for anticancer activity (4-6) is in operation. The Chilean flora is unique due to the extreme climatic conditions and natural barriers. In this communication, the results obtained with extracts (mainly 50% aqueous ethanol) of 519 samples are presented.

METHODS

PLANT MATERIAL.—The plant materials for screening were collected from different regions of Chile. A herbarium sheet is kept for future reference in our Institute (Herbarium Conc.).

EXTRACTS.—Botanically identified plant material (300-500 g), for the most part air-dried, was powdered and extracted with 50% aqueous ethanol in most instances. The solvent was removed *in vacuo* below 50° to give the extracts. When fresh plant material or other solvents were used, the fact is noted by footnote in the third column of table 1.

ANTICANCER SCREENING.—The crude extracts were tested by the National Cancer Institute, National Institutes of Health, Bethesda, Md., U.S.A. The test systems used were PS, KB and LE. In a very few cases, WA was used (7, 8).

RESULTS

Table 1 lists plants grouped family-wise and arranged alphabetically with their botanical names, the month, year and locality of collection, plant parts and the anticancer test systems giving positive results.

DISCUSSION

Of 519 plant extracts, 156 gave initial results indicative of anticancer activity in one or more tumor systems. However, the activity could be confirmed, so far, in only 14 samples from the same group of plants.

Confirmed plants are distributed in the following families: in division Pteridophyta, 11 samples out of 30 tested showed initial activity and only one of them, belonging to the Azollaceae family, was confirmed.

In division Angiospermae-Dicotyledoneae, 134 samples showed initial activity and 13 were confirmed. These 13 plants are distributed as follows: one in Celastraceae, five in Compositae and one, each, in Elaeocarpaceae, Leguminosae, Linaceae, Scrophulariaceae, Thymelaeaceae, Umbelliferae and Winteraceae.

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TABLE 1. Results of the antitumor screening of plant extracts.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
	DIV. CYANOPHYTA				
	OSCILLATORIACEAE				
408	<i>Oscillatoria</i> sp.....	Lf, St, Rt ^g	10/70	Chillan	—
416	<i>Oscillatoria</i> sp.....	Lf, St, Rt	10/70	Chillan	—
	DIV. CHLOROPHYTA				
	ULVACEAE				
311	<i>Ulva lactuca</i> L.....	Lf, St	12/69	Concepción	—
403	<i>Ulva lactuca</i> L. var. <i>latissima</i> (L.) DC.....	Lf, St, Rt	7/70	Mejillones	—
404	<i>Ulva nematoidea</i> Bory.....	Lf, St, Rt	7/70	Mejillones	—
	DIV. PHAEOPHYTA				
	CHORDARIACEAE				
399	<i>Myriogloia grandis</i> (Howe) Levring.....	Lf, St, Rt	7/70	Mejillones	—
	DESMARESTIACEAE				
307	<i>Desmarestia herbacea</i> (Turner) Lamouroux.....	Lf, St	12/69	Concepción	—
	DICTYOTACEAE				
379	<i>Glossophora kunthii</i> (C. Ag.) J. Ag.....	Lf, St, Rt	7/70	Tarapacá	—
	DURVILLEACEAE				
389	<i>Durvillea antarctica</i> (Cham.) Hariot.....	Lf, St, Rt	3/70	Concepción	—
	LESSONIAEAE				
388	<i>Lessonia fuscens</i> Bory.....	Lf, St, Rt	7/70	Antofagasta	—
391	<i>Lessonia nigrescens</i> Bory.....	Lf, St, Rt	7/70	Tarapacá	—
390	<i>Macrocystis integrifolia</i> Bory.....	Lf, St, Rt	7/70	Tarapacá	—
313	<i>Macrocystis pyrifera</i> (L.) C. Ag.....	Lf, St	12/69	Concepción	—
	DIV. RHODOPHYTA				
	BANGIACEAE				
384	<i>Porphyra columbina</i> Montagne.....	Lf, St, Rt	3/70	Concepción	—
	CORALLINACEAE				
398	<i>Corallina chilensis</i> Descaigne.....	Lf, St, Rt	7/70	Iquique	—
	GIGARTINACEAE				
383	<i>Chondrus canaliculatus</i> (C. Agardh) Greville.....	Lf, St, Rt	7/70	Antofagasta	—
315	<i>Gigartina chamissoi</i> (C. Agardh) J. Agardh.....	Lf, St	12/69	Lirquén	—
385	<i>Gigartina chamissoi</i> (C. Agardh) J. Agardh "Tipo Lessonii".....	Lf, St, Rt	7/70	Antofagasta	—
382	<i>Gigartina papillosa</i> (Borg.) Setchell et Gardner.....	Lf, St, Rt	3/70	Concepción	—
301	<i>Iridea boryana</i> (Setchell et Gardner) Skottsberg.....	Lf, St	12/69	Concepción	—

GRACILARIACEAE					
306	<i>Gracilaria confervoides</i> (L.) Grev.....	Lf, St	4/69	Concepción	—
305	<i>Gracilaria foliifolia</i> (Fornk) Borges.....	Lf, St	5/69	Concepción	—
415	<i>Gracilaria lemaneiformis</i> (Bory) Weber van Bosse.....	St, Rt	7/70	Coquimbo	—
327	<i>Gracilaria verrucosa</i> (Hudson) Papenfuss.....	Lf, St	4/69	Concepción	—
PHYLLORHIZACEAE					
380	<i>Gymnogongrus furcellatus</i> (C. Agardh) J. Agardh.....	Lf, St, Rt	3/70	Concepción	—
RHODYMENIACEAE					
387	<i>Rhodymenia corallina</i> (Bory) Greville.....	Lf, St, Rt	7/70	Antofagasta	—
SOLIERIACEAE					
381	<i>Agardhiella tenera</i> (J. Agardh) Schmitz.....	Lf, St, Rt	7/70	Coquimbo	—
STYPOCAULACEAE					
386	<i>Halopteris hordacea</i> (Harvey) Sauvageau.....	Lf, St, Rt	7/70	Antofagasta	—
DIV. FUNGI					
POLYPORACEAE					
481	<i>Ganoderma applanatum</i> Pers. ex Fr.	St	3/71	Isla Mocha	—
DIV. LICHENES					
CORACEAE					
356	<i>Cora pavonia</i> (Sw.) Fr.....	Lf, St, Fr, Fl, Rt	1/70	Llanquihue	—
STICTACEAE					
400	<i>Pseudocyphellaria orygmaea</i> (Ach.) Malme.....	Lf, St, Rt	3/71	Llanquihue	—
402	<i>Sticta damaecornis</i> (Sw). Ach.....	St, Rt	3/71	Chiloé	—
192	<i>Sticta divulsa</i> Tayl.....	Pl	4/69	Llanquihue	—
USNEACEAE					
55	<i>Usnea magellanica</i> (Mont.) Mot.....	Px	1/68	Arauco	PS
DIV. BRYOPHYTA					
GRIMMIACEAE					
277	<i>Racomitrium lanuginosum</i> (Hedw.) Brid.....	Lf, St	10/69	Bío-Bío	—
HYOPTERYGIACEAE					
359	<i>Hypopterygium thouinii</i> (Schwaegr.) Mont.....	Lf, St, Fl, Rt	1/70	Chiloé	—
MARCHANTIACEAE					
414	<i>Marchantia berteriana</i> Lehm. et Ldbg.....	Lf, St	1/70	Chiloé	—
POLYTRICHACEAE					
335	<i>Dendroligotrichum dendroides</i> (Hedw.) Broth.....	Lf, St	1/70	Llanquihue	—
SPHAGNACEAE					
354	<i>Sphagnum fimbriatum</i> Wilson.....	Lf, St, Rt	1/70	Chiloé	—
331	<i>Sphagnum magellanicum</i> Brid.....	Lf, St	1/70	Chiloé	—
DIV. PTERIDOPHYTA					
AZOLLACEAE					
456	<i>Azolla filiculoides</i> Lam.....	Lf, St, Rt, Fl	3/71	Isla Mocha	PS ^d

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
	CYATHEACEAE				
191	<i>Lophosoria quadripinnata</i> (Gmel.) C. Chr.	Lf	4/69	Llanquihue	—
	EQUISETACEAE				
280	<i>Equisetum bogotense</i> H.B.K.	St	10/69	Bío-Bío	PS
	GLEICHENIACEAE				
344	<i>Gleichenia cryptocarpa</i> Hook.	Lf, St	1/70	Chiloé	KB
185	<i>Gleichenia squamulosa</i> (Desv.) Moore	Lf	4/69	Llanquihue	—
	HYMENOPHYLLACEAE				
266	<i>Hymenoglossum cruentum</i> (Cav.) Presl	Lf, St	4/69	Ancud	—
413	<i>Hymenophyllum caudiculatum</i> Mart. var. <i>productum</i> (Presl) C. Chr.	Lf, St, Rt	1/70	Chiloé	—
467	<i>Hymenophyllum dentatum</i> Cav.	Lf, St, Rt	1/71	Llanquihue	—
457	<i>Hymenophyllum krauseanum</i> Phil.	Lf, St, Rt	3/71	Isla Mocha	—
	LYCOPODIACEAE				
339	<i>Lycopodium magellanicum</i> (Palis. de Beauv.) Sw.	Lf, St	1/70	Llanquihue	—
465	<i>Lycopodium paniculatum</i> Desv.	Lf, St, Rt	1/71	Llanquihue	PS
285	<i>Lycopodium scariosum</i> Forst.	Lf, St	9/66	Osorno	—
	POLYPODIACEAE				
190	<i>Adiantum chilense</i> Kaulf.	Lf	4/69	Valdivia	KB
136	<i>Asplenium trilobum</i> Cav.	Pl	8/68	Concepción	—
466	<i>Blechnum arcuatum</i> Remy et Fée	Lf, St, Rt	1/71	Osorno	KB
462	<i>Blechnum asperum</i> (Klotzsch) Sturm.	Lf, St, Rt	3/71	Isla Mocha	—
79	<i>Blechnum chilense</i> (Kaulf.) Mett.	Lf, St	1/68	Concepción	—
156	<i>Blechnum hastatum</i> Kaulf.	Lf	3/69	Concepción	—
161	<i>Blechnum magellanicum</i> (Desv.) Mett.	Lf	12/68	Concepción	—
270	<i>Blechnum microphyllum</i> (Goldm.) Morton	Lf, St	10/69	Bío-Bío	PS, KB
343	<i>Blechnum penna-marina</i> (Poir.) Kuhn	Lf, St	1/70	Chiloé	—
282	<i>Cheilanthes glauca</i> (Cav.) Mett.	Lf, St	10/69	Bío-Bío	—
463	<i>Ctenitis spectabilis</i> (Kaulf.) Kunkel	Lf, St, Rt	1/71	Chiloé	—
188	<i>Hypolepis rugosula</i> (Labill.) J. Sm. var. <i>poeppigii</i> (Kunze) C. Chr.	Lf	4/69	Llanquihue	KB
9	<i>Polypodium feuillei</i> Bert.	Rh	8/67	Concepción	—
32	<i>Polypodium feuillei</i> Bert.	Px ^f	3/68	Concepción	PS
134	<i>Polystichum mohrioides</i> (Bory) Presl var. <i>elegans</i> (Remy et Fée) C. Chr.	Lf, St	10/68	Magallanes	—
472	<i>Polystichum plicatum</i> (Poepp.) Hicken	Lf, St	1/71	Cautín	PS
464	<i>Pteris semiadnata</i> Phil.	Lf, St, Rt	1/71	Osorno	—
469	<i>Rumohra adiantiformis</i> (Forst.) Ching	Lf, St	1/71	Llanquihue	—

DIV. GYMNOSPERMAE					
ARAUCARIACEAE					
237	<i>Araucaria araucana</i> (Mol.) K. Koch.	Lf, St	8/69	Bío-Bío	KB
CUPRESSACEAE					
227	<i>Austrocedrus chilensis</i> (D. Don) Fl. et Bout.	Lf, St	8/69	Bío-Bío	—
405	<i>Pilgerodendron uvifera</i> (D. Don) Florin.	Lf, St	7/70	Mejillones	KB
EPHEDRACEAE					
119	<i>Ephedra andina</i> Poepp. ex C. A. Mey.	St	2/68	Aconcagua	KB
PODOCARPACEAE					
455	<i>Dacrydium fonckii</i> (Phil.) Benth.	Lf, St	1/71	Osorno	—
27	<i>Podocarpus andina</i> P. et E.	Lf, St	11/67	Ñuble	KB
474	<i>Podocarpus andina</i> P. et E.	Lf, St ^e	11/67	Ñuble	PS
54	<i>Podocarpus nubigena</i> Lindl.	Lf, St	3/68	Llanquihue	PS
26	<i>Podocarpus saligna</i> D. Don.	Lf, St	5/67	Concepción	—
454	<i>Saxegothaea conspicua</i> Lindl.	Lf, St	1/71	Osorno	PS
DIV. ANGIOSPERMAE-DICOTYLEDONEAE					
AEXTOXICACEAE					
12	<i>Aextoxicon punctatum</i> R. et P.	Lf, St	8/67	Concepción	—
AIZOACEAE					
30	<i>Carpobrotus aequilaterus</i> (Haw.) N. E. Br.	Lf, St ^f	2/68	Coquimbo	—
253	<i>Carpobrotus aequilaterus</i> (Haw.) N. E. Br.	Lf, St	9/69	Curicó	—
397	<i>Tetragonia maritima</i> Barn.	Lf, St, Rt	7/70	Antofagasta	—
ANACARDIACEAE					
72	<i>Lithraea caustica</i> (Mol.) H. et A.	Lf, St	1/68	Concepción	—
138	<i>Schinus latifolius</i> (Gill.) Engler.	Lf, St, Fr	2/69	Coquimbo	—
87	<i>Schinus molle</i> L. var. <i>areira</i> (L.) DC.	Lf, St	2/68	Aconcagua	KB
319	<i>Schinus montanus</i> (Phil.) Engler.	Lf, St	9/69	Aconcagua	—
70	<i>Schinus polygamus</i> (Cav.) Cabr.	Lf, St	1/68	Concepción	KB
APOCYNACEAE					
214	<i>Elytropus chilensis</i> (DC.) Muell. Arg.	Lf, St	4/69	Concepción	—
406	<i>Skytanthus acutus</i> Meyen.	Lf, St	7/70	Antofagasta	KB
245	<i>Vinca major</i> (L.) DC.	Lf, St	9/69	Curicó	—
ARALIACEAE					
141	<i>Pseudopanax laetevirens</i> (Gay) Seem.	Lf, St	9/68	Magallanes	—
ARISTOLOCHACEAE					
507	<i>Aristolochia chilensis</i> Bridges ex Lindl.	Lf, St	10/71	La Serena	—
ASCLEPIADACEAE					
49	<i>Tweedia hookeri</i> (Dcne.) Malme.	Lf, St	3/68	Concepción	PS
BERBERIDACEAE					
205	<i>Berberis buxifolia</i> Lam.	Lf, St, Fl	10/68	Magallanes	—
361	<i>Berberis darwinii</i> Hook.	Lf, St	1/70	Chiloé	—
278	<i>Berberis empetrifolia</i> Lam.	Lf, St	10/69	Bío-Bío	—
147	<i>Berberis ilicifolia</i> Forst.	Lf, St	10/68	Magallanes	—
217	<i>Berberis linearifolia</i> Phil.	Lf, St, Fl	2/69	Valdivia	KB

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
363	<i>Berberis spinosissima</i> (Reiche) Ahrendt.....	Lf, St, Fr	10/69	Bío-Bío	—
	BORAGINACEAE				
512	<i>Cordia decandra</i> H. et A.	Lf, St, Fl	10/71	Coquimbo	—
423	<i>Cynoglossum creticum</i> Mill.	Lf, St, Fl, Fr	12/70	Lo Valdés	—
71	<i>Echium vulgare</i> L.	Lf, St, Fl	1/68	Concepción	PS
272	<i>Heliotropium stenophyllum</i> H. et A.	Lf, St	10/69	Coquimbo	—
283	<i>Plagiobothrys tinctorius</i> (R. et P.) Gray.....	Lf, St, Fl	10/69	Bío-Bío	—
	BUDDLEIACEAE				
123	<i>Buddleia globosa</i> Lam.	Lf, St	4/68	Arauco	—
	CACTACEAE				
493	<i>Eulychnia acida</i> Phil.	Lf	11/71	Salamanca	—
491	<i>Eulychnia acida</i> Phil.	St	11/71	Salamanca	—
279	<i>Maihuenia poeppigii</i> (Otto) Web.	St, Fl	10/69	Bío-Bío	—
244	<i>Neoporteria subgibbosa</i> (Haw.) Britton et Rose.....	St	9/69	Curicó	—
243	<i>Trichocereus chilensis</i> (Colla) Britton et Rose.....	St	9/69	Curicó	—
499	<i>Trichocereus litoralis</i> (Johow) Looser.....	Lf, St	12/71	Valparaíso	KB
	CALLITRICHACEAE				
218	<i>Callitriche autumnalis</i> L.	Lf, St, Rt	4/69	Concepción	KB
223	<i>Callitriche turfosa</i> Bert.	Lf, St	8/69	Bío-Bío	—
	CAPPARIDACEAE				
293	<i>Cleome chilensis</i> DC.	Lf, St, Fl, Rt	11/69	Antofagasta	—
	CAPRIFOLIACEAE				
247	<i>Sambucus australis</i> Ch. et Schl.	Lf, St, Fl	9/69	Curicó	—
	CARYOPHYLLACEAE				
228	<i>Stellaria cuspidata</i> Willd.	Lf, St	8/69	Concepción	—
	CELASTRACEAE				
66	<i>Maytenus boaria</i> Mol.	Lf, St	2/68	Aconcagua	PS ^d
149	<i>Maytenus disticha</i> (Hook. f.) Urban.....	Lf, St	10/68	Magallanes	KB
132	<i>Maytenus magellanica</i> (Lam.) Hook. f.	Lf, St	10/68	Magallanes	—
	CHENOPODIACEAE				
470	<i>Atriplex chilense</i> Colla.	Lf, St, Fl	3/71	Isla Mocha	—
61	<i>Atriplex semibaccata</i> R. Br.	Lf, St	2/68	Coquimbo	—
104	<i>Salicornia fruticosa</i> L.	St	2/68	Coquimbo	—
374	<i>Salsola kali</i> L.	Lf, St, Fl	3/70	Concepción	—
395	<i>Salicornia peruviana</i> L.	St, Fl	7/70	Coquimbo	—
	COMPOSITAE				
44	<i>Ambrosia chamissonis</i> (Less.) Greene.....	Lf, St, Fr	1/68	Concepción	PS
314	<i>Anthemis arvensis</i> L.	Lf, St, Fl, Rt	12/69	Concepción	—
372	<i>Arctium minus</i> (Hill) Bernh.	Lf, St, Fl, Fr	1/70	Chiloé	KB

460	<i>Aster albus</i> (Phil.) Reiche	Lf, St, Sd	3/71	Isla Mocha	PS
271	<i>Aster vahlilii</i> Hook. et Arn.	St, Fl	10/69	Bío-Bío	—
15	<i>Baccharis concava</i> (R. et P.) Pers.	Lf, St	8/67	Concepción	—
202	<i>Baccharis confertifolia</i> Bert. ex Colla	Lf, St, Fl	2/69	Coquimbo	—
74	<i>Baccharis linearis</i> (R. et P.) Pers.	Lf, St	1/68	Concepción	—
135	<i>Baccharis magellanica</i> (Lam.) Pers.	Lf, St	9/68	Magallanes	—
486	<i>Baccharis nivalis</i> (Wedd.) Sch. Bip.	Lf, St, Fl	1/71	Osorno	—
355	<i>Baccharis nivalis</i> (Wedd.) Sch. Bip.	Lf, St, Fr	1/70	Llanquihue	—
494	<i>Baccharis paniculata</i> DC.	Lf, St, Fl	10/69	Salto del Laja	—
144	<i>Baccharis patagonica</i> H. et A.	Lf, St	10/68	Magallanes	—
495	<i>Baccharis pedicellata</i> DC.	Lf, St, Fl	-1/71	Contulmo	KB
98	<i>Baccharis racemosa</i> DC.	Lf, St, Fl	1/68	Concepción	PS
19	<i>Baccharis rhomboidalis</i> DC.	St	4/66	Concepción	—
182	<i>Baccharis sagittalis</i> (Less.) DC.	Lf, St, Fl	4/69	Concepción	—
369	<i>Baccharis sphaerocephala</i> H. et A.	Lf, St, Fl, Fr	1/70	Chiloé	—
490	<i>Baccharis umbelliformis</i> DC.	Lf, St, Fl	3/71	Isla Mocha	KB
233	<i>Bahia ambrosioides</i> Lag.	Lf, St	9/69	Curicó	—
163	<i>Bidens laevis</i> (L.) Britton	Lf, St, Fl	4/68	Arauco	—
102	<i>Carthamus lanatus</i> L.	Lf, St, Fl	2/68	Aconcagua	—
376	<i>Carduus pycnocephalus</i> L.	Lf, St, Fl	11/69	Concepción	—
427	<i>Centaurea chilensis</i> H. et A.	Lf, St	11/70	Aconcagua	—
174	<i>Centipeda elatinoides</i> (Less.) Benth.	Lf, St	3/69	Concepción	—
418	<i>Chaetanthera glabrata</i> (DC.) Meigen	Lf, St, Fl	11/70	Aconcagua	—
292	<i>Chevreulia sarmentosa</i> (Pers.) Blake	Lf, St, Rt, Fr	12/69	Concepción	—
168	<i>Chiliotrichium diffusum</i> (Forts.) O.K.	Lf, St	10/68	Magallanes	—
341	<i>Chrysanthemum parthenium</i> (L.) Bernh.	Lf, St, Fl	1/70	Chiloé	KB, PS
503	<i>Chuquiraga acicularis</i> D. Don	Lf, St	10/71	Atacama	KB
347	<i>Chuquiraga oppositifolia</i> D. Don	Lf, St	11/69	Aconcagua	—
258	<i>Cichorium intybus</i> L.	Lf, St, Fr	1/68	Concepción	KB
101	<i>Cotula coronopifolia</i> L.	Lf, St	4/68	Arauco	—
337	<i>Cotula scariosa</i> (Cass.) Franch.	Lf, St	1/70	Chiloé	—
241	<i>Cynara cardunculus</i> L.	Lf, St, Fr	9/69	Curicó	—
200	<i>Dasyphyllum diacanthoides</i> (Less.) Cabr.	Lf, St	5/69	Arauco	—
64	<i>Encelia canescens</i> Lam.	Lf, St, Fl	2/68	Coquimbo	—
370	<i>Encelia canescens</i> Lam. var. <i>tomentosa</i> (Walp.) J. Ball.	Lf, St	3/70	Aconcagua	—
3	<i>Eupatorium glechonophyllum</i> Less.	Lf, St	8/67	Concepción	—
1	<i>Eupatorium salvia</i> Colla	Lf, St	10/63	Coquimbo	—
230	<i>Eupatorium salvia</i> Colla	Lf, St, Fl	9/69	Curicó	—
504	<i>Flourensia thurifera</i> (Mol.) DC.	Lf, St	10/71	Illapel	—
484	<i>Gnaphalium longifolium</i> Phil.	Lf, St, Fl	3/71	Isla Mocha	—
362	<i>Gochnatia fascicularis</i> (D. Don) D. Don ex H. et A.	Lf, St, Fr	3/70	Maule	KB
99	<i>Gutierrezia resinosa</i> (H. et A.) Blake	Lf, St, Fl	2/68	Coquimbo	KB
28	<i>Haplopappus angustifolius</i> (DC.) Reiche	Lf, St	2/68	Coquimbo	—
489	<i>Haplopappus arbutoides</i> Remy	Lf, St, Fl	11/70	Portillo	—
107	<i>Haplopappus canescens</i> (Phil.) Reiche	Lf, St, Fl	1/68	Concepción	—

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
296	<i>Haplopappus cuneifolius</i> Nutt.	Lf, St	11/69	San Felipe	—
14	<i>Haplopappus foliosus</i> DC.	Lf, St ^f	9/67	Coquimbo	—
95	<i>Haplopappus glutinosus</i> Cass.	Lf, St	3/68	Concepción	—
249	<i>Haplopappus macrocephalus</i> (Less.) DC.	Lf, St	9/69	Curicó	—
81	<i>Haplopappus multifolius</i> (O.K.) Reiche	Lf, St, Fl	2/68	Aconcagua	PS
88	<i>Haplopappus parvifolius</i> (DC.) Gray	Lf, St, Fl	2/68	Coquimbo	—
300	<i>Haplopappus pedunculatus</i> Remy	Lf, St	10/69	Bío-Bío	—
2	<i>Haplopappus rengifoanus</i> Remy	Lf, St	2/67	Coquimbo	—
439	<i>Haplopappus scaposus</i> Remy	Lf, St, Fl, Rt	11/70	O'Higgins	—
261	<i>Haplopappus scrobiculatus</i> (Ness) DC.	Lf, St	9/69	Curicó	—
352	<i>Lagenophora hirsuta</i> Poepp. ex Less.	Lf, St, Rt	1/70	Llanquihue	—
148	<i>Lepidophyllum cupressiforme</i> (Lam.) Cass.	Lf, St	10/68	Magallanes	—
291	<i>Leuceria senecioides</i> H. et A.	Lf, St, Fl	10/69	Bío-Bío	—
316	<i>Lucilia nivea</i> (Phil.) Cabr.	Lf, St, Rt	10/69	Bío-Bío	—
145	<i>Madia sativa</i> Mol.	Lf, St	2/68	Coquimbo	—
378	<i>Matricaria chamomilla</i> L.	Lf, St, Fl, Rt	1/70	Chiloé	—
421	<i>Moschardia pinnatifida</i> R. et P.	Lf, St, Fl	11/70	Aconcagua	—
160	<i>Mutisia rosea</i> Poepp. ex Less.	Lf, St, Fr	3/69	Concepción	—
234	<i>Mutisia spinosa</i> R. et P. var. <i>pulchella</i> (Speg.) Cabr.	Lf, St, Fl	9/69	Curicó	—
342	<i>Mutisia spinosa</i> R. et P. var. <i>pulchella</i> (Speg.) Cabr.	Lf, St	1/70	Llanquihue	—
468	<i>Nassauvia lagascae</i> (Don) Meigen	Lf, St	1/71	Cautín	—
251	<i>Ophryosporus paradoxus</i> (H. et A.) Benth.	Lf, St	2/69	Coquimbo	—
172	<i>Ophryosporus triangularis</i> Meyen	Lf, St	2/68	Coquimbo	—
57	<i>Pleocarphus revolutus</i> D. Don	Lf, St, Fl	2/68	Coquimbo	PS ^d
407	<i>Pluchea chingoyo</i> DC.	Lf, St	7/70	Arica	KB ^d
252	<i>Podanthus mitiqui</i> Lindl.	Lf, St, Fl	9/69	Curicó	KB
40	<i>Podanthus ovatifolius</i> Lag.	Lf, St	2/68	Concepción	PS ^d
513	<i>Polyachyrus fuscus</i> (Meyen) Walp.	Lf, St, Fl	10/71	Copiapó	—
519	<i>Polyachyrus poeppigii</i> (Kunze ex Less.)	Lf, St, Fl	10/71	Atacama	—
86	<i>Proustia cuneifolia</i> D. Don	Lf, St, Fl	2/68	Aconcagua	—
364	<i>Proustia cuneifolia</i> D. Don	Lf, St	11/69	Aconcagua	—
110	<i>Proustia ilicifolia</i> H. et A. fma. <i>baccharoides</i> (D. Don) Fabris	Lf, St, Fr	2/68	Aconcagua	—
37	<i>Proustia pyrifolia</i> Lag.	Lf, St	3/68	Concepción	PS
441	<i>Senecio acanthifolius</i> Hombr. et Jacq.	Lf, St, Fr	1/71	Valdivia	—
437	<i>Senecio adenotrichius</i> DC.	Lf, St	11/70	Santiago	—
440	<i>Senecio anthemidiphyllus</i> Remy	Lf, St, Fl	11/70	O'Higgins	—
449	<i>Senecio buglossus</i> Phil.	Lf, St	1/71	Llanquihue	—
520	<i>Senecio cerberoanus</i> Remy	Lf, St, Fl, Rt	10/71	Coquimbo	PS

368	<i>Senecio chilensis</i> Less.	Lf, St, Rt	1/70	Llanquihue	—
442	<i>Senecio chionophyllus</i> Phil.	Lf, St, Fl	1/71	Llanquihue	—
294	<i>Senecio cymosus</i> Remy	Lf, St, Fl, Fr	10/69	Arauco	PS
167	<i>Senecio erraticus</i> Bertol.	Lf, St, Fl	3/69	Concepción	PS ^d
143	<i>Senecio flaginoides</i> DC.	Lf, St, Fr	10/68	Magallanes	—
511	<i>Senecio munnozii</i> Cabr.	Lf, St, Fl	10/71	Coquimbo	—
151	<i>Senecio neaei</i> DC.	Lf, St, Fr	3/69	Magallanes	—
7	<i>Senecio nigrescens</i> H. et A.	Lf, St ^f	8/67	Concepción	—
332	<i>Senecio otites</i> Kunze ex DC.	Lf, St, Fl	1/70	Chiloé	PS
365	<i>Senecio philippii</i> Sch. Bip.	Lf, St, Fl	1/70	Llanquihue	—
250	<i>Senecio sinuatilobus</i> DC.	Lf, St, Fl	9/69	Curicó	—
213	<i>Senecio smithii</i> DC.	Lf, St, Fl	2/69	Magallanes	—
444	<i>Senecio subpubescens</i> Cabr.	Lf, St, Fl	1/71	Llanquihue	—
329	<i>Senecio trifurcatus</i> (Forst.) Less.	Lf, St, Fr	1/70	Llanquihue	—
248	<i>Senecio vulgaris</i> L.	Lf, St, Fr	9/69	Curicó	—
75	<i>Senecio yegua</i> (Colla) Cabr.	Lf, St	4/68	Arauco	—
137	<i>Solidago chilensis</i> Meyen.	Lf, St, Fl	3/69	Concepción	—
485	<i>Tanacetum vulgare</i> L.	St	3/71	Isla Mocha	KB
56	<i>Tessaria absinthioides</i> (H. et A.) DC.	Lf, St, Fl	2/68	Coquimbo	PS ^d
169	<i>Triptilion spinosum</i> R. et P.	Lf, St, Fl	12/68	Concepción	—
108	<i>Xanthium spinosum</i> L.	Lf, St, Fr	2/68	Coquimbo	PS
CONVOLVULACEAE					
165	<i>Calystegia sepium</i> (L.) R. Br. var. <i>americana</i> (Sims)				
	Kitagawa	Lf, St	3/69	Concepción	—
59	<i>Convolvulus arvensis</i> L.	Lf, St	2/68	Coquimbo	PS
80	<i>Convolvulus hermanniae</i> L'Herit.	Lf, St, Fr	1/68	Concepción	—
CORIARIACEAE					
173	<i>Coriaria ruscifolia</i> L.	Lf, St, Fr	11/68	Concepción	KB
CORNACEAE					
22	<i>Griselinia scandens</i> (R. et P.) Taub.	Lf, St	8/67	Concepción	—
CUCURBITACEAE					
517	<i>Sicyos bryoniaefolius</i> Moris.	Lf, St, Fl	10/71	Aconcagua	KB
CUNONIACEAE					
351	<i>Caldcluvia paniculata</i> (Cav.) D. Don.	Lf, St	3/70	Chiloé	—
199	<i>Weinmannia trichosperma</i> Cav.	Lf, St	3/69	Llanquihue	KB
DESFONTAINEACEAE					
229	<i>Desfontainea spinosa</i> R. et P.	Lf, St	8/69	Bío-Bío	PS
ELAEOCARPACEAE					
73	<i>Aristotelia chilensis</i> (Mol.) Stuntz.	Lf, St	3/68	Concepción	KB
53	<i>Crinodendron hookerianum</i> Gay.	Lf, St	3/68	Puerto Varas	PS ^d , KB
178	<i>Crinodendron patagua</i> Mol.	Lf, St	3/69	Concepción	KB
EMPETRACEAE					
142	<i>Empetrum rubrum</i> Vahl.	Lf, St	3/69	Magallanes	—
ERICACEAE					
353	<i>Gaultheria phillyreifolia</i> (Pers.) Sleumer.	Lf, St	1/70	Chiloé	KB

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
76	<i>Pernettya furiens</i> (H. et A.) Klotzsch.....	Lf, St, Fr	4/68	Arauco	KB
180	<i>Pernettya mucronata</i> (L.f.) Gaud.....	Lf, St	5/69	Llanquihue	—
ESCALLONIACEAE					
96	<i>Escallonia illinita</i> Presl.....	Lf, St	7/68	Aconcagua	—
35	<i>Escallonia pulverulenta</i> (R. et P.) Pers.....	Lf, St	1/68	Concepción	—
231	<i>Escallonia revoluta</i> (R. et P.) Pers.....	Lf, St, Fr	8/69	Bío-Bío	—
255	<i>Escallonia rubra</i> (R. et P.) Pers.....	Lf, St	8/69	Bío-Bío	KB
267	<i>Escallonia virgata</i> (R. et P.) Pers.....	Lf, St	11/68	Magallanes	—
EUCRYPHIACEAE					
196	<i>Eucryphia cordifolia</i> Cav.....	Lf, St, Fr	5/69	Arauco	KB
265	<i>Eucryphia glutinosa</i> (P. et E.) Baillon.....	Lf, St	8/69	Bío-Bío	KB
EUPHORBIACEAE					
11	<i>Adenopeltis colliguaya</i> Bert.....	Lf, St ^f	8/67	Concepción	—
212	<i>Chiropetalum tricuspidatum</i> (Lam.) A. Juss.....	Lf, St	4/69	Concepción	—
38	<i>Colliguaya dombeyana</i> A. Juss.....	Lf, St	1/68	Nuble	—
129	<i>Colliguaya integerrima</i> Gill. et Hook.....	Lf, St, Fl	10/68	Santa Cruz	KB
41	<i>Colliguaya odorifera</i> Mol.....	Lf, St	2/68	Aconcagua	PS
419	<i>Colliguaya salicifolia</i> Gill. et Hook.....	Lf, St	12/70	Lo Valdés	—
514	<i>Euphorbia lactiflua</i> Phil.....	Lf, St, Fl	10/71	Copiapó	PS
281	<i>Euphorbia peplus</i> L.....	Lf, St, Fl, Rt	9/69	Curicó	—
357	<i>Euphorbia portulacoides</i> Spreng.....	Lf, St	3/70	Maule	—
162	<i>Euphorbia serpens</i> Kth.....	Lf, St, Fl	3/69	Concepción	—
FAGACEAE					
130	<i>Nothofagus alpina</i> (P. et E.) Oerst.....	Lf, St	11/68	Arauco	—
410	<i>Nothofagus alpina</i> (P. et E.) Oerst.....	St, Lf	10/70	Nuble	KB
128	<i>Nothofagus antarctica</i> (Forst.) Oerst.....	Lf, St	11/68	Arauco	KB
131	<i>Nothofagus dombeyi</i> (Mirb.) Blume.....	Lf, St	10/68	Nahuelbuta	KB
215	<i>Nothofagus obliqua</i> (Mirb.) Blume.....	Lf, St	2/69	Valdivia	KB
157	<i>Nothofagus pumilio</i> (P. et E.) Krasser.....	Lf, St	10/68	Magallanes	—
FLACOURTIACEAE					
451	<i>Azara alpina</i> Poepp. et Endl.....	Lf, St	10/70	Nuble	PS
452	<i>Azara alpina</i> Poepp. et Endl.....	Lf, St	11/70	O'Higgins	—
208	<i>Azara celastrina</i> D. Don.....	Lf, St	2/69	Coquimbo	KB
203	<i>Azara integrifolia</i> R. et P.....	Lf, St, Fr	5/69	Arauco	KB
24	<i>Azara integrifolia</i> R. et P.....	Lf, St	8/67	Concepción	KB
322	<i>Azara lanceolata</i> Hook. f.....	Lf, St	10/69	Arauco	PS
506	<i>Azara petiolaris</i> (Don) Johnst.....	Lf, St	10/71	Aconcagua	—
175	<i>Azara serrata</i> R. et P.....	Lf, St, Fl	10/68	Arauco	—

FRANCOACEAE					
4	<i>Francoa appendiculata</i> Cav.....	Lf ^f	8/67	Concepción	WA, KB
50	<i>Francoa appendiculata</i> Cav.....	Rh	3/68	Concepción	KB
133	<i>Francoa appendiculata</i> Cav.....	St, Fl	3/69	Concepción	KB
308	<i>Francoa appendiculata</i> Cav.....	Fl	1/70	Concepción	KB
FRANKENIACEAE					
394	<i>Frankenia chilensis</i> Presl. var. <i>campestris</i> (Schauer) Günckel.....	Lf, St, Fr	7/70	Antofagasta	—
FUMARIACEAE					
286	<i>Fumaria capreolata</i> L.....	Lf, St	9/69	Curicó	—
GERANIACEAE					
509	<i>Balbisia peduncularis</i> (Lindl.) D. Don.....	Lf, St, Fl	10/71	Coquimbo	—
298	<i>Viviania rosea</i> Hook.....	Lf, St	11/69	San Felipe	—
320	<i>Wendtia gracilis</i> Meyen.....	Lf, St	10/69	Bío-Bío	—
GESNERIACEAE					
338	<i>Asteranthera ovata</i> (Cav.) Hanst.....	Lf, St	1/70	Chiloé	—
349	<i>Mitraria coccinea</i> Cav.....	Lf, St, Fl	1/70	Chiloé	—
36	<i>Sarmienta repens</i> R. et P.....	Lf ^f	3/68	Concepción	—
GOMORTEGACEAE					
60	<i>Gomortega keule</i> (Mol.) Johnst.....	Lf, St ^f	5/68	Concepción	—
GUNNERACEAE					
112	<i>Gunnera chilensis</i> Lam.....	Fl ^f	10/68	Concepción	KB
113	<i>Gunnera chilensis</i> Lam.....	Lf ^f	10/68	Concepción	KB
114	<i>Gunnera chilensis</i> Lam.....	St ^f	10/68	Concepción	—
328	<i>Gunnera magellanica</i> Lam.....	Lf, St, Rt	1/70	Llanquihue	—
HYDRANGEACEAE					
268	<i>Hydrangea serratifolia</i> (H. et A.) Phil. f.....	Lf, St, Fr	10/69	Bío-Bío	—
HYDROPHYLLACEAE					
186	<i>Phacelia magellanica</i> (Lam.) Cov.....	Lf, St	4/69	Concepción	—
HYPERICACEAE					
482	<i>Hypericum androsaemum</i> L.....	Lf, St, Fr	1/71	Valdivia	—
ICACINACEAE					
18	<i>Citronella mucronata</i> (R. et P.) D. Don.....	Lf, St	4/67	Concepción	—
KRAMERIACEAE					
501	<i>Krameria cistoidea</i> Hook. et Arn.....	Lf, St	10/71	La Serena	—
LABIATAE					
103	<i>Marrubium vulgare</i> L.....	Lf, St, Fr	2/68	Aconcagua	—
122	<i>Mentha pulegium</i> L.....	Lf, St, Fr	4/68	Arauco	PS
257	<i>Satureja gilliesii</i> (Grah.) Briq.....	Lf, St	9/69	Curicó	KB
198	<i>Satureja multiflora</i> (R. et P.) Briq.....	Lf, St	5/69	Arauco	—
118	<i>Sphacele campanulata</i> Lindl.....	Lf, St	4/68	Arauco	KB
225	<i>Stachys macraei</i> Benth.....	Lf, St	8/69	Concepción	—
290	<i>Stachys sericea</i> Cav.....	Lf, St	10/69	Bío-Bío	—
219	<i>Teucrium bicolor</i> Sm.....	Lf, St	4/69	Concepción	KB

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
	LARDIZABALACEAE				
153	<i>Boquilla trifoliolata</i> (DC.) Dcne.....	Lf, St	3/69	Concepción	—
78	<i>Lardizabala bitermata</i> R. et P.....	Lf, St	1/68	Concepción	—
	LAURACEAE				
17	<i>Cryptocarya alba</i> (Mol.) Looser.....	Lf, St ^f	8/67	Concepción	KB
155	<i>Persea lingue</i> (R. et P.) Nees.....	Lf, St, Fr	10/68	Arauco	—
	LEGUMINOSAE				
85	<i>Acacia caven</i> (Mol.) Mol.....	Lf, St	11/69	Aconcagua	KB
302	<i>Adesmia atacamensis</i> Phil.....	Lf, St	7/70	Antofagasta	—
171	<i>Adesmia boronoides</i> Hook. f.....	Lf, St	3/69	Magallanes	—
401	<i>Adesmia longipes</i> Phil.....	Lf, St	3/71	Llanquihue	—
424	<i>Adesmia microphylla</i> H. et A.....	St	11/70	Aconcagua	—
487	<i>Adesmia retusa</i> Griseb.....	Lf, St	1/71	Cautín	—
302	<i>Anarthrophyllum cumingii</i> (H. et A.) Benth.....	Lf, St	11/69	Aconcagua	—
505	<i>Balsamocarpon brevifolium</i> Clos.....	Lf, St, Fl	10/71	Coquimbo	—
508	<i>Caesalpinia angulata</i> (H. et A.) Baillon.....	Lf, St	10/71	Coquimbo	—
82	<i>Cassia frondosa</i> Ait.....	Lf, St	1/68	Concepción	—
62	<i>Cassia obtusa</i> Clos.....	Lf, St	2/68	Coquimbo	PS ^d
5	<i>Cassia stipulacea</i> Ait.....	Lf ^f	8/67	Concepción	—
111	<i>Cytisus monspessulanus</i> L.....	Lf, St, Fr	1/68	Concepción	—
242	<i>Galega officinalis</i> L.....	Lf, St	9/69	Curicó	—
246	<i>Lathyrus hookerii</i> G. Don.....	Lf, St	9/69	Curicó	—
216	<i>Lotus uliginosus</i> Schkuhr.....	Lf, St, Fl	1/69	Concepción	—
373	<i>Lupinus angustifolius</i> L.....	Lf, St	10/69	Bío-Bío	—
140	<i>Lupinus arboreus</i> Sims.....	Lf, St, Sd	1/68	Concepción	—
269	<i>Lupinus microcarpus</i> Sims.....	Lf, St, Fl	10/69	Arauco	—
125	<i>Parkinsonia aculeata</i> L.....	Lf	2/68	Aconcagua	—
105	<i>Prosopis chilensis</i> (Mol.) Stuntz.....	Lf, St	2/68	Aconcagua	—
417	<i>Prosopis tamarugo</i> Phil.....	Lf, St	7/70	Atacama	—
65	<i>Psoralea glandulosa</i> L.....	Lf, St	2/68	Aconcagua	PS
232	<i>Sophora cassioides</i> (Phil.) Sparre.....	Lf, St	8/69	Bío-Bío	—
92	<i>Sophora macrocarpa</i> Smith.....	Fr	4/68	Arauco	—
93	<i>Sophora macrocarpa</i> Smith.....	Lf, St	4/68	Arauco	—
	LINACEAE				
166	<i>Linum chamissonis</i> Schiede.....	Lf, St, Fl	12/68	Concepción	—
179	<i>Linum selaginoides</i> Lam.....	Lf, St, Fl	4/69	Concepción	KB ^d
201	<i>Linum usitatissimum</i> L.....	Lf, St, Fr	1/68	Concepción	—
	LOASACEAE				
448	<i>Loasa acanthifolia</i> Lam.....	Lf, St, Fl	1/71	Osorno	—

434	<i>Loasa sclareifolia</i> Juss.	Lf, St, Fl	11/70	Aconcagua	—
LOBELIACEAE					
239	<i>Lobelia excelsa</i> Bonpl.	Lf, St	9/69	Curicó	KB
31	<i>Lobelia tupa</i> L.	Lf, St	1/68	Concepción	—
LORANTHACEAE					
350	<i>Eremolepis punctulata</i> (Clos) Griseb.	Lf, St, Fr	1/70	Chiloé	—
411	<i>Lepidoceras kingii</i> Hook. f.	Lf, St	9/70	Ñuble	—
23	<i>Phrygilanthus heterophyllus</i> (R. et P.) Eichl.	Lf, St	9/67	Concepción	KB
207	<i>Phrygilanthus verticillatus</i> (R. et P.) Eichl.	Lf, St	2/69	Coquimbo	KB
77	<i>Phrygilanthus tetrandrus</i> (R. et P.) Eichl.	Lf, St, Fl	1/68	Concepción	KB
MALESHERBIAEAE					
304	<i>Malesherbia linearifolia</i> Poir.	Lf, St, Fl	11/69	Aconcagua	—
MALVACEAE					
446	<i>Corynabutilon vitifolium</i> (Cav.) Kearney	Lf, St	1/71	Valdivia	—
127	<i>Cristaria betonicaefolia</i> Pers.	Lf, St	2/68	Coquimbo	—
58	<i>Malvella leprosa</i> (Ort.) Krap.	Lf, St	2/68	Coquimbo	—
176	<i>Modiola caroliniana</i> (L.) G. Don	Lf, St, Fr	3/69	Concepción	—
260	<i>Sphaeralcea obtusiloba</i> (Hook.) G. Don	Lf, St, Fr	2/69	Coquimbo	—
MONIMIACEAE					
210	<i>Laurelia sempervirens</i> (R. et P.) Tul.	Lf, St	4/69	Concepción	KB
13	<i>Peumus boldus</i> Mol.	Lf, St	8/67	Concepción	—
MYRTACEAE					
323	<i>Amomyrtus luma</i> (Mol.) Legr. et Kausel.	Lf, St, Fl	10/69	Arauco	—
478	<i>Amomyrtus meli</i> (Phil.) Legr. et Kausel.	Lf, St, Fr	1/71	Valdivia	—
51	<i>Myrceugenella apiculata</i> (DC.) Kausel.	Lf, St	3/68	Llanquihue	KB
116	<i>Myrceugenella chequen</i> (Mol.) Kausel.	Lf, St	3/68	Llanquihue	KB
68	<i>Myrceugenia exsucca</i> (DC.) Berg.	Lf, St	3/68	Llanquihue	KB
195	<i>Myrceugenella gayana</i> (Barn.) Kausel.	Lf, St	5/69	Arauco	KB
326	<i>Myrceugenia leptospermoides</i> (DC.) Kausel.	Lf, St	10/69	Arauco	KB
69	<i>Myrceugenia obtusa</i> (DC.) Berg.	Lf, St	1/68	Concepción	KB
117	<i>Myrceugenia planipes</i> (H. et A.) Berg.	Lf, St	4/68	Arauco	KB
48	<i>Myrceugenia parvifolia</i> (DC.) Kausel.	Lf, St	3/68	Llanquihue	KB
345	<i>Tepulia stipularis</i> (H. et A.) Griseb.	Lf, St, Fl	1/70	Chiloé	KB
124	<i>Ungi molinae</i> Turcz.	Lf, St	4/68	Arauco	KB
MYZODENDRACEAE					
193	<i>Myzodendron punctulatum</i> Banks et Soland.	Lf, St	10/68	Magallanes	—
NOLANACEAE					
393	<i>Nolana flaccida</i> (Phil.) Johnst.	Lf, St, Fl	7/70	Antofagasta	—
324	<i>Nolana paradoxa</i> Lindl.	Lf, St, Fr	11/69	Concepción	—
396	<i>Nolana peruviana</i> (Gaud.) Johnst.	St, Fr	7/70	Tocopilla	—
ONAGRACEAE					
371	<i>Boisduvalia subulata</i> (R. et P.) Raimann.	Lf, St, Fl	3/70	Ñuble	KB
518	<i>Fuchsia lycioides</i> Andr.	Lf, St	10/71	Aconcagua	—
91	<i>Fuchsia magellanica</i> Lam.	Lf, St, Fl	4/68	Arauco	KB

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
209	<i>Ludwigia peploides</i> (Kunth) Raven subsp. <i>montevideensis</i> (Spreng.) Raven	Lf, St	4/69	Concepción	KB
159	<i>Oenothera stricta</i> Ledeb. ex Link.	Lf, St	1/69	Concepción	—
477	OXALIDACEAE <i>Oxalis clandestina</i> Phil.	Lf, St, Fl	11/70	O'Higgins	—
288	<i>Oxalis rosea</i> Jacq.	Lf, St, Fl, Rt	12/69	Concepción	—
425	PAPAVERACEAE <i>Argemone subfusiformis</i> Ownb. subsp. <i>subfusiformis</i>	Lf, St, Fl, Fr	11/70	Aconcagua	—
276	<i>Eschscholtzia californica</i> Cham.	Lf, St, Fl	10/69	Arauco	—
262	PHYTOLACCACEAE <i>Ercilla spicata</i> (Bert.) Moq.	Fr	10/69	Concepción	PS
10	<i>Ercilla spicata</i> (Bert.) Moq.	Lf, St	8/67	Concepción	—
97	PLANTAGINACEAE <i>Plantago major</i> L.	Lf, St, Fr	3/68	Concepción	—
461	<i>Plantago truncata</i> Cham. subsp. <i>firma</i> (Kunze) Pilger	Lf, St, Rt, Fl	3/71	Isla Mocha	—
84	POLYGONACEAE <i>Chorizanthe glabrescens</i> Benth.	Lf, St, Fl	2/68	Coquimbo	KB
46	<i>Muehlenbeckia hastulata</i> (J. Sm.) Johnst.	Lf, St	2/68	Aconcagua	KB
121	<i>Rumex acetosella</i> L.	Lf, St, Fr	2/68	Concepción	KB
429	PORTULACACEAE <i>Calandrinia grandiflora</i> Lindl.	Lf, St	11/70	Santiago	—
430	<i>Calandrinia sericea</i> H. et A.	Lf, St, Fl	11/70	Santiago	—
194	PRIMULACEAE <i>Anagallis alternifolia</i> Cav.	Lf, St	4/69	Concepción	KB
90	PROTEACEAE <i>Embothrium coccineum</i> Forst.	Lf, St	4/68	Arauco	KB
52	<i>Gevuina avellana</i> Mol.	Lf, St	3/68	Llanquihue	—
158	<i>Lomatia dentata</i> R. Br.	Lf, St	5/69	Arauco	—
187	<i>Lomatia ferruginea</i> (Cav.) R. Br.	Lf, St	4/69	Llanquihue	—
43	<i>Lomatia hirsuta</i> (Lam.) Diels	Lf, St	3/68	Llanquihue	PS
287	<i>Orites myrtoidea</i> (P. et E.) B. et H.	Lf, St	10/69	Bío-Bío	KB
498	RANUNCULACEAE <i>Anemone moorei</i> Espinoza	Lf, St	11/71	Talca	—
16	RHAMNACEAE <i>Colletia spinosissima</i> Gmel.	Lf, St ^f	10/67	Concepción	—
235	<i>Discaria articulata</i> (Phil.) Miers	St	8/69	Bío-Bío	KB
500	<i>Discaria crenata</i> (Clos) Regel	Lf ^h	10/71	Concepción	—
45	<i>Discaria crenata</i> (Clos) Regel	Lf, St	1/68	Concepción	PS
109	<i>Retanilla ephedra</i> (Vent.) Brongn.	St	1/68	Concepción	KB

240	<i>Retanilla stricta</i> H. et A.	St	9/69	Curicó	KB
256	<i>Trevoa trinervis</i> Miers.	Lf, St, Fl	9/69	Curicó	—
ROSACEAE					
126	<i>Acaena argentea</i> R. et P.	Lf, St	11/68	Arauco	KB
177	<i>Acaena integerrima</i> Gill. ex H. et A.	Lf, St	3/69	Magallanes	KB
443	<i>Acaena leptacantha</i> Phil.	Lf, St	1/71	Llanquihue	PS
309	<i>Acaena macrocephala</i> Poepp.	Lf, St, Rt	10/69	Bío-Bío	—
100	<i>Acaena ovalifolia</i> R. et P.	Lf, St	4/68	Arauco	—
428	<i>Kageneckia angustifolia</i> D. Don	Lf, St	11/70	O'Higgins	KB
94	<i>Kageneckia oblonga</i> R. et P.	Lf, St, Fl, Fr	7/68	Aconcagua	KB
42	<i>Margyricarpus pinnatus</i> (Lam.) O. K.	Px	1/68	Concepción	—
170	<i>Quillaja saponaria</i> Mol.	Lf, St	1/68	Concepción	—
284	<i>Rosa moschata</i> L.	Lf, St	10/69	Bío-Bío	KB
445	<i>Rubus geoides</i> Sm.	Lf, St, Rt	1/71	Cautín	—
426	<i>Tetraglochin alatum</i> (Gill. ex Hook.) O. K.	Lf, St	11/70	O'Higgins	KB
RUBIACEAE					
479	<i>Galium eriocarpum</i> Bartl.	St	11/70	Portillo	—
236	<i>Galium petersianum</i> Phil.	Lf, St	9/69	Curicó	—
330	<i>Nertera depressa</i> Banks et Soland.	Lf, St, Rt	1/70	Llanquihue	—
184	<i>Nertera depressa</i> Banks et Soland.	Lf, St, Fr, Rt	4/69	Concepción	—
211	<i>Relbunium hypocarpium</i> (L.) Hemsl.	Lf, St	3/69	Concepción	KB
RUTACEAE					
20	<i>Pitavia punctata</i> Mol.	Lf, St	8/67	Concepción	—
SANTALACEAE					
21	<i>Myoschilos oblonga</i> R. et P.	Lf, St	8/67	Concepción	PS
432	<i>Quinchamalium chilense</i> Lam.	Lf, St, Fl	11/70	Aconcagua	KB
SAPINDACEAE					
273	<i>Valenzuela trinervis</i> Bert.	Lf, St	9/69	Aconcagua	—
SAPOTACEAE					
515	<i>Lucuma valparadisea</i> (Mol.) A. DC.	Lf, St	10/71	Aconcagua	—
SAXIFRAGACEAE					
206	<i>Ribes magellanicum</i> Poir.	Lf, St	10/68	Magallanes	KB
204	<i>Ribes punctatum</i> R. et P.	Lf, St	3/69	Concepción	KB
488	<i>Ribes ruizii</i> Rehd.	Lf, St, Fr	1/71	Osorno	PS
289	<i>Saxifraga magellanica</i> Poir.	Lf, St	10/69	Bío-Bío	—
409	<i>Saxifraga magellanica</i> Poir.	Lf, St, Rt	10/70	Ñuble	KB
SCROPHULARIACEAE					
197	<i>Alonsoa incisifolia</i> R. et P.	Lf, St, Fr	3/69	Concepción	—
297	<i>Calceolaria dentata</i> R. et P.	Lf, St	10/69	Bío-Bío	—
435	<i>Calceolaria hypericina</i> Poepp. ex DC.	Lf, St, Fl	11/70	Aconcagua	KB
6	<i>Calceolaria integrifolia</i> Murr.	Lf, St	8/67	Concepción	—
433	<i>Calceolaria mimuloides</i> Clos.	Lf, St, Fl	12/70	Lo Valdés	—
497	<i>Calceolaria polifolia</i> Hook.	Lf, St, Rt, Fl	11/70	Aconcagua	—
317	<i>Calceolaria punctata</i> (R. et P.) Vahl.	Lf, St	10/69	Arauco	—
420	<i>Calceolaria purpurea</i> Grah.	Lf, St	1/70	O'Higgins	—

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
259	<i>Calceolaria thyrsiflora</i> Grah.	Lf, St, Fr	9/69	Curicó	—
83	<i>Calceolaria violacea</i> Cav.	Lf, St	1/68	Concepción	—
334	<i>Digitalis purpurea</i> L. a form with white flowers	Lf, St, Fl, Fr	1/70	Chiloé	PS, KB ^d
367	<i>Euphrasia debilis</i> Wettst.	Lf, St, Fl	1/70	Llanquihue	—
412	<i>Mimulus cupreus</i> Donbr.	Lf, St, Fl	9/70	Nuble	—
318	<i>Ourisia microphylla</i> P. et E.	Lf, St	10/69	Bío-Bío	PS
483	<i>Stemodia chilensis</i> Benth.	Lf, St, Fr	1/71	Valdivia	—
89	<i>Verbascum thapsus</i> L.	Lf, St, Fr	2/68	Aconcagua	—
312	<i>Verbascum virgatum</i> Stokes	Lf, St	10/69	Arauco	—
SOLANACEAE					
221	<i>Fabiana imbricata</i> R. et P.	Lf, St	8/69	Bío-Bío	PS
502	<i>Fabiana viscosa</i> H. et A.	Lf, St	10/71	Coquimbo	—
431	<i>Jaborosa caulescens</i> Gill. et Hook.	Lf, St, Rt	11/70	Aconcagua	—
438	<i>Latua pubiflora</i> (Griseb.) Phil.	Lf	3/69	Valdivia	—
63	<i>Lycium chilense</i> Miers ex Bert.	Lf, St, Fr	2/68	Coquimbo	PS
220	<i>Nicotiana glauca</i> Grah.	Lf, St, Fr	2/69	La Serena	KB
183	<i>Solanum nigrum</i> L.	Lf, St, Fl	3/69	Concepción	—
164	<i>Solanum pinnatum</i> Cav.	Lf, St, Fl	2/69	Aconcagua	—
67	<i>Solanum tomatillo</i> Remy	Lf, St	2/68	Aconcagua	PS, KB
496	<i>Solanum valdiviense</i> Dun.	St, Fr	1/71	Chiloé	—
458	<i>Vestia foetida</i> (R. et P.) Hoffm.	Lf, St	3/71	Isla Mocha	KB
THYMELAEACEAE					
340	<i>Ovidia pillopillo</i> (Gay) Meissn.	Lf, St	1/70	Llanquihue	PS ^d
TROPAEOLACEAE					
476	<i>Tropaeolum polyphyllum</i> Cav.	Lf, St, Fl	12/71	Cajón del Maipo	KB
UMBELLIFERAE					
39	<i>Apium australe</i> Thouars.	Lf, St ^f	3/68	Concepción	PS ^d
238	<i>Azorella caespitosa</i> Cav.	Lf, St	3/69	Magallanes	—
360	<i>Eryngium depressum</i> H. et A.	Lf, St, Fl	3/70	Nuble	—
222	<i>Eryngium paniculatum</i> Cav. et Domb. ex De la Roche	St, Fr	8/69	Concepción	—
422	<i>Gymnophyton isatidicarpum</i> (Presl ex DC.) Math. et Const.	St	11/70	Aconcagua	—
516	<i>Gymnophyton robustum</i> Clos.	St	10/71	Coquimbo	—
299	<i>Laretia acaulis</i> (Cav.) Gill. et Hook.	Lf, St, Rt	11/69	San Felipe	—
146	<i>Mulinum spinosum</i> (Cav.) Pers.	Lf, St	3/69	Magallanes	PS
224	<i>Sanicula crassicaulis</i> Poepp. ex DC.	Lf, St	8/69	Concepción	—
436	<i>Sanicula graveolens</i> Poepp. ex DC.	Lf, St, Fl	12/70	La Valdés	—

459	URTICACEAE					
	<i>Pilea elegans</i> Gay	Lf, St	3/71	Isla Mocha	—	
471	<i>Urtica urens</i> L.	Lf, St	3/71	Isla Mocha	PS	
	VERBENACEAE					
346	<i>Aloysia triphylla</i> (L'Herit.) Britton	Lf, St	1/70	Chiloé	—	
263	<i>Diostea juncea</i> (Gill. et Hook.) Miers	St	9/69	Curicó	—	
366	<i>Diostea acoparia</i> (Gill. et Hook.) Miers	St	11/69	Aconcagua	—	
150	<i>Junellia tridens</i> (Lag.) Mold.	Lf, St	3/69	Magallanes	—	
47	<i>Phyla nodiflora</i> (L.) Greene	Lf, St, Fl	2/68	Coquimbo	PS	
25	<i>Rhaphythamnus spinosus</i> (Juss.) Mold.	Lf, St	8/67	Concepción	—	
106	<i>Verbena litoralis</i> H.B.K.	St, Fr	2/68	Aconcagua	—	
	VIOLACEAE					
303	<i>Viola capillaris</i> Pers.	Lf, St, Fl	10/69	Arauco	—	
	VITACEAE					
8	<i>Cissus striata</i> R. et P.	Lf, St ^f	8/67	Concepción	—	
	WINTERACEAE					
29	<i>Drimys winteri</i> Forst. var <i>chilensis</i> (DC.) A. Gr.	Lf, St	1/68	Concepción	PS ^d	
	ZYGOPHYLLACEAE					
510	<i>Bulnesia chilensis</i> Gay	Lf, St, Fl	10/71	Coquimbo	PS	
154	<i>Larrea nitida</i> Cav.	Lf, St, Fl	10/68	Magallanes	PS	
480	<i>Porlieria chilensis</i> Johnst.	St	10/69	Coquimbo	—	
	CLASS MONOCOTYLEDONEAE					
	ALISMATACEAE					
120	<i>Sagittaria montevidensis</i> Cham. et Schlecht, subsp. <i>chilensis</i> (Cham. et Schlecht.) Bogin	Lf, St, Fr	4/68	Arauco	PS	
	ALSTROEMERIACEAE					
333	<i>Alstroemeria aurantiaca</i> D. Don	Lf, St, Fl, Fr	1/70	Chiloé	—	
33	<i>Alstroemeria ligta</i> L.	St, Fl	1/68	Concepción	—	
264	<i>Bomarea salsilla</i> (L.) Herb.	Lf, St, Fl	10/69	Concepción	—	
	AMARYLLIDACEAE					
295	<i>Leucocoryne ixioides</i> Lindl.	Lf, St, Fl	10/69	Bío-Bío	—	
	BROMELIACEAE					
274	<i>Fascicularia bicolor</i> (R. et P.) Mez.	Lf	3/68	Concepción	—	
254	<i>Greigia sphacelata</i> (R. et P.) Regel	Lf	8/69	Bío-Bío	—	
139	<i>Puya chilensis</i> Mol.	Lf	1/68	Concepción	—	
	CYPERACEAE					
152	<i>Cyperus eragrostis</i> Lam.	Lf, Fl	4/68	Arauco	—	
336	<i>Oreobolus obtusangulus</i> Gaud.	Lf, St, Rt	1/70	Chiloé	—	
348	<i>Scirpus inundatus</i> (R. Br.) Poir.	Lf, St	1/70	Chiloé	—	
450	<i>Uncinia multifaria</i> Nees	Lf, Fl	1/71	Castro	—	
325	<i>Uncinia phleoides</i> (Cav.) Persl.	Lf, St	10/69	Concepción	—	
	GRAMINEAE					
310	<i>Briza maxima</i> L.	Lf, St, Fr	12/69	Concepción	—	
358	<i>Distichlis thalassica</i> H. B. K.	Lf, St, Fl	3/70	Maule	—	

TABLE 1. Continued.

Code No.	Family-Botanical names ^a	Part(s) ^b	Month/year of collect.	Sample origin	Antitumor activity ^c
375	<i>Polypogon australis</i> Brongn.....	Lf, St, Fl, Fr	1/70	Llanquihue	—
226	<i>Stipa filiculmis</i> Del.....	Lf, St	8/69	Concepción	—
IRIDACEAE					
115	<i>Libertia chilensis</i> (Mol.) Gunckel.....	Lf, Fl	5/68	Arauco	—
473	<i>Libertia chilensis</i> (Mol.) Gunckel.....	Lf, St, Rt	1/71	Valdivia	PS
321	<i>Sisyrinchium junceum</i> E. Mey. ex Presl.....	Lf, St	9/69	Curicó	—
LILIACEAE					
447	<i>Astelia pumila</i> (Forst.) Gaud.....	Lf, St, Rt	1/71	Valdivia	—
475	<i>Herreria stellata</i> R. et P.....	Lf, St	5/71	Maule	—
275	<i>Pasithea coerulea</i> (R. et P.) D. Don.....	Lf	10/69	Concepción	—
377	<i>Scilla chloroleuca</i> Kth.....	Lf, St, Fl, Rt	10/69	Bío-Bío	—
PHILESIACEAE					
34	<i>Lapageria rosea</i> R. et P.....	Lf, St	1/68	Concepción	PS
189	<i>Luzuriaga polyphylla</i> (Hook.) Macbr.....	St, Fr, Lf	4/69	Llanquihue	—
181	<i>Luzuriaga polyphylla</i> (Hook.) Macbr.....	Lf, St	4/69	Llanquihue	—
453	<i>Philesia magellanica</i> J. F. Gmel.....	Lf, St, Fl	1/71	Osorno	—

^aNomenclature used is that of Engler (9, 10). If not recognized by Engler, Willis (11) is used.

^bBk, bark; Bu, bulb; Fl, flower; Fr, fruit; If, inflorescence; Lf, leaf; Pl, whole plant; Px, plant minus root; Rh, rhizome; Rt, root; Sd, seed; St, stem; Wr, root wood; Ws, stem wood.

^cInitial activity unless otherwise noted as in footnote d. PS, P-388 lymphocytic leukemia; KB, human epidermoid carcinoma of the nasopharynx (cell culture); LE, L-1210 lymphoid leukemia; WA, Walker carcinosarcoma 256 (intramuscular); (—) indicates no significant activity. All extracts were tested in PS and KB.

^dConfirmed activity.

^eDefatted; ethyl acetate extract.

^fFresh plant material used.

^gEthanol extract.

^hEtOH-soluble fraction of aqueous extract.

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Título: Screening of Chilean plants for Anti-

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