REFERENCES

1. กสิพันธ์,ช. 2511. ตำราเภสัชศึกษา. หน้า 103-4. กรุงเทพมหานคร: สรยุทธการพิมพ์.
2. Jewvachdamrongkul,Y., et al. 1982. Identification of some Thai medicinal plants. Mahidol Univ. J. Pharm. Sci. 9(3): 65-73.
3. Youngken,H.W. 1950. Textbook of Pharmacognosy. pp.609-21, 632-5, 802-11. Philadelphia: The Blakiston Co.
4. Hebert,B.E., and Ellery,K.W. 1948. Textbook of Practical Pharmacognosy. pp.243-55. London: Bailliere, Tindall and Cox.
5. Jackson,B.P., and Snowdon,D.W. 1968. Powdered Vegetable Drugs. pp.102-3, 120-125, 130-5. London: J.& A.Churchill Ltd.
6. ราชบัณฑิตยสถาน. 2531. พจนานุกรมฉบับราชบัณฑิตยสถาน พ.ศ.2525. พิมพ์ครั้งที่ 4. หน้า 412. กรุงเทพมหานคร: โรงพิมพ์อักษรเจริญทัศน์.
7. Hornok,L. 1992. Cultivation and Processing of Medicinal PLants. p.161. Chichester: John Wiley & Sons.
8. Post,G.E., and Dinsmore,J.E. 1932. Flora of Syria, Palestine and Sinai. pp.3-20. Beirut: American Press.
9. Smitinand,T. 1980. Thai Plant Names (Botanical names-Vernacular names). p.359. Bangkok: Royal Forest Department.
10. Andrews,F.W. 1950. The Flowering Plants of the Anglo-Egyptian Sudan. Vol.1. pp.9-12. Arbroath: T.Buncle & Co.Ltd.

11. Kirtikar,K.R., and Basu,B.D. 1980. Indian medicinal plants. Vol.I. 2nd ed. E.Blatter, J.F.Caius and K.S.Mhaskar (eds.). p.11. Allahabad.

12. El-Darhakhny,M. 1965. Egyptian *Nigella sativa*. Arzneimittel-Forsch. 15(10): 1227-9. (through CA 64: 4118f. 1966).

13. Rahman,A.U, Malik,S., and Zaman,K. 1992. Nigellimine: A new isoquinoline alkaloid from the seeds of *Nigella sativa*. J. Nat. Prod. 55(5): 676-8.

14. _____, Malik,S., Sultan,A., Chaudhary,I., and Rehman,H.U. 1985. Nigellimine N-oxide-a new isoquinoline alkaloid from the seeds of *Nigella sativa*. Heterocycles 23(4): 953-5. (through CA 102: 218368x. 1985).

15. _____, Malik,S., Cunheng,H., and Jon,C. 1985. Isolation and structure determination of nigellicine, a novel alkaloid from the seeds of *Nigella sativa*. Tetrahedron Lett. 26(23): 2759-62. (through CA 103: 119926s. 1985).

16. Salama,R.B. 1973. Sterols in the seed oil of *Nigella sativa*. Planta Med. 24(4): 375-7.

17. Gad,A.M., Dakhakny,M.E., and Hassan,M.M. 1963. The chemical constitution of Egyptian *Nigella sativa* oil. Planta Med. Arzneipflanzenforschung 11(2): 134-8. (through CA 60: 3267e. 1964).

18. Mahfouz,M., and El-Dakhakhny,M. 1960. The isolation of a crystalline active principle from *Nigella sativa* seeds. J. Pharm.Sci. United Arab.Rep. 1: 9. (through CA 56: 6091. 1962).

19. Tiwari,R.D. 1946. The chemical examination of the seeds of *Nigella sativa* Linn. Univ. Allahabad Studies. Chem. Sect. 1-6. (through CA 41: 6672e,f. 1947).

20. Mustafa,Z., and Soliman,G. 1943. Melanthigenin and its identity with hederagenin. J.Chem.Soc. 70-1. (through CA 37: 3441[1]. 1943).

21. Scheunert,A., and Theile,E. 1952. Vitamin C content of green plants with particular emphasis on dehydroascorbic acid content. Pharmazie 7: 776-80. (through CA 47: 12537i. 1953).

22. Kudryashova,N.A., and Kolobkova,E.V. 1953. Content of free amino acids in dormant seeds. Doklady Akad. Nauk S.S.S.R. 91: 1365-8. (through CA 48: 233f. 1954).

23. Canonica,L., Jommi,G., Scolastico,C., and Bonati,A. 1963. The pharmacologically active principle in *Nigella sativa*. Gazz. Chim. Ital. 93(11): 1404-7. (through CA 61: 888a. 1964).

24. Bilge,S., Kusmenoglu,S., Mutlugil,A., and Bingol,F. 1985. A study with seed oil of *Nigella sativa*. Gazi Univ. Eczacilik Fak. Derg. 2(1): 1-7. (through CA 104: 4789c. 1986).

25. Deshpande,R.S., Adhikary,P.R., and Tipnis,H.P. 1974. Stored grain pest control agents from *Nigella sativa* and *Pogostemon heyneanus*. Bull. Grain Technol. 12(3): 232-4. (through CA 84: 55270c. 1976).

26. Ansari,A.A., Hassan,S., Kenne,L., Rahman,A.U., and Wehler,T. 1988. Structural studies on a saponin isolated from

Nigella sativa. Phytochemistry 27(12): 3977-9. (through CA 110: 151310s. 1989).

27. Roberg,M. 1937. Occurrence and distribution of saponins in seed drugs. Arch. Pharm. 275: 328-36. (through CA 6815^{6}. 1937).

28. Sen,P., and Sanyal,P.K. 1959. seeds of *Nigella sativa* Linn. as an insecticide. Bull. Calcutta Sch. Trop. Med. 7(1): 13-14. (through BA 35: 54325. 11964).

29. Zawahry,M.R. 1963. Isolation of a new hypotensive fraction from *Nigella sativa* seeds. Kongr. Pharm. Wiss. Vortr. Originalmitt. 23, Muensters (Westfalen) Ger. 193-203. (through CA 62: 7003b. 1965).

30. Mahfouz,M., Dakakny, M., Gemei,A., and Moussa,H. 1962. Choleretic action of *Nigella sativa* seeds oil. Egyptian Pharm. Bull. 44: 225-9. (through CA 64: 11721f. 1966).

31. _____, Dakakny,M., Gemei,A., and Moussa,H. 1965. Choleretic action of *Nigella sativa* L. seeds oil. Egypt Pharm. Bull. 44(4): 225-9. (through BA 47: 72471. 1966).

32. Toppozada,H.H., Mazloum,H.A., and Dakhakhny,M.E. 1965. The antibacterial properties of *Nigella sativa* seeds active principle with some clinical applications. J. Egypt Med. Ass. 48: 187-202. (through CA 66: 92390r. 1967).

33. Agrawala,I.P., Achar,M.V.S., and Tamankar,P.P. 1971. Galactogogue action of *Nigella sativa*. Indian J. Med. Sci. 25(8): 535-7. (through BA 54: 33404. 1972).

34. Zawahry,M.R., and Kararra,A. 1964. *Nigella sativa* plants. Indian Med. Forum. 15(9): 289-96. (through CA 65: 9350f.

1966).

35. ผู้พัฒนพงศ์,ล., และ วงศ์ประเสริฐ,ท. 2530. สมุนไพรไทย. ตอนที่ 5. หน้า 521. กรุงเทพมหานคร: กรมป่าไม้.

36. Neufeldt,V. ed. 1988. Webster's New World Dictionary of American English. 3rd college ed. p.556. New York: Webster's New World.

37. Bailey,L.H. 1949. Manual of Cultivated Plants. p.440. New York: MacMillan.

38. Hafliger,T.J., Cook,C.D.K., and Crovello,T.J. 1988. Dicot weeds. W.Puntener (ed.). p.184. Basel: Reinhardt Druck.

39. Schultz,O.E., and Gmelin,R. 1953. Isolation of the glycoside of *Lepidium sativum* in the pure state by column chromatography on cellulose powder. Arzneimittel Fotsch. 2: 568-9. (through CA 47: 4048a. 1953).

40. _____, and Barthold,E. 1952. The importance of electrophoresis for the purification of the glycoside of the seeds of *Lepidium sativum*. Arzneimittel Forsch. 2: 532-4. (through CA 47: 4047i. 1953).

41. Jensen,K.A., Conti,J., and Kjear,A. 1955. Volatile isothiocyanates in seeds and roots of various Brassicae. Acta Chem. Scand. 7: 1267-70. (through CA 49: 5304b. 1955).

42. Virtanen,A.I., and Saarivirta,M. 1962. Formation of benzyl cyanide, benzylisothiocyanate, and benzyltthiocyanate in the crushed seeds of *Lepidium sativum*. Suomen Kemistilehti. 35B: 248-9. (through CA 58: 7135h. 1963).

43. Saarivirta,M., and Artturi,I. 1963. A method for estimating benzyl isothiocyanate, benzyl thiocyanate, and benzyl nitrile in the crushed, moistened seeds of *Lepidium sativum*. Acta Chem. Scand. 17(suppl.1): S74-S78. (through CA 59: 14282a. 1963).

44. Vasudev,I.C., and Handa,K.L. 1956. Examination of the fixed oil of *Lepidium sativum* seeds. J. Sci. Ind. Research(india) 15B: 725-6. (through CA 51: 8455g. 1957).

45. Mehta,T.N., and Gokhale,M.V. 1964. The fatty acid composition of garden cress oil. Indian J. Appl. Chem. 27(2): 71-6. (through CA 61: 12327b. 1964).

46. Saarivirta,M. 1973. Formation of benzylcyanide, benzylthiocyanate, benzyl isothiocyanate, and benzylamine from benzylglucosinolate in *Lepidium*. Planta Med. 24(2): 112-9. (through CA 80: 1460p. 1974).

47. Gmelin,R., and Virtanen,A.I. 1959. New type of enzymatic cleavage of mustard oil glucosides. Formation of allyl thiocyanate in *Thalspi arvense* and benzyl thiocyanate in *Lepidium ruderale* and *L. sativum*. Acta Chem. Scand. 13: 1474-5. (through CA 56: 7715f. 1962).

48. Tyler,J.M. 1965. The seed mucilage of *Lepidium sativum*, I. Identification of the components and some neutral oligosaccharides derived from the mucilage, together with the examination of pentosan fraction. J. Chem. Soc. 5288-300. (through CA 63: 18240b. 1965).

49. Kalac,J., and Zemanova,J. 1969. Seed mucilage of *Lepidium sativum*, I.Isolation and characteristics of basic products. Biologia (Bratislava) 24(6): 433-9. (through CA 71: 56800u. 1969).

50. Ray,T.C., Callow,J.A., and Kenedy,J.F. 1988. Composition of root mucilage polysaccharides from *Lepidium sativum*. J. Exp. Bot. 39(206): 1249-61. (through CA 110: 4725c. 1989).

51. Franz,H., and Ziska,P. 1980. Isolation of lectins with different specificities using immobilized immunoglobulin. Lectins: Biol. Biochem. Clin. Biochem. Proc. 3rd Lectin Meet. 1: 179-84. (through CA 96: 4725v. 1982).

52. Ziska,P., and Franz,H. 1982. The lectin from garden cress (*Lepidium sativum*). Isolation and characterization. Lectins: Biol. Biochem. Clin. Biochem. 2: 711-19. (through CA 97: 15964m. 1982).

53. _____, Kindt,A., and Franz,H. 1982. Isolation and characterization of a lectin from garden cress (*Lepidium sativum*). Acta Histochem. 71(1): 29-33. (through CA 97: 125571w. 1982).

54. Bahroun,A., and Damak,M. 1985. Contribution to the study of *Lepidium sativum* (Cruciferae). Structure of a new compound isolated from the seed: lepidine. J. Soc. Chim. Tunis. 2(1): 15-24. (through CA 104: 65910g. 1986).

55. Bailey,L.H. 1949. Manual of Cultivated Plants. pp.748-54. New York: MacMillan.

56. Smitinand,T. 1980. Thai Plant Names (Botanical names-Vernacular names). p.100. Bangkok: Royal Forest Department.

57. เรืองรังษี,น. 2534. เครื่องเทศ. หน้า 193. กรุงเทพมหานคร: โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย.

58. Neufeldt,V. ed. 1988. Webster's New World Dictionary of American English. 3rd college ed. p.337. New York: Webster's New World.

59. Hiroe,M. 1958. Umbelliferae of Asia (Excluding Japan). p.44. Kyoto: Maruzen.

60. Chakraborti,S.K. 1956-58. Chemical investigation of indian spices. Trans. Bose Research Inst. Calcutta. 21: 61-6. (through CA 53: 22602e. 1959).

61. Menon,K.N., and Raman,P.S. 1953. Petroselenic acid:Occurrence in some Umbelliferae seed fats. Proc. Indian Acad. Sci. Sect.A. 38(20): 128-31. (through BA 28: 22051. 1954).

62. Leung, A.Y. 1980. Encyclopeadia of common natural ingredients used in food, drugs and cosmetics. pp.150-2. New York: John Wiley & sons.

63. Garg,S.K. 1976. Antifertility screening of plants:Effect of four indigenous plants on early pregnancy in female albino rats. Indian J. Med. Res. 64(8): 1133-1135. (through BA 63: 41039. 1977).

64. Al-Khamis,K.I. Al-said,M.A. Islam,M.W., Tariq,M., Parmar,N.S., and Ageel,A.M. 1988. Antifertility, anti-implantation and abortifacient activity of the aqueous extract of *Cuminum cyminum*. Fitoterapia 59(1): 5-10. (through BA 86(9): 95705. 1988).

65. เรืองรังษี,น. 2534. เครื่องเทศ. หน้า 165. กรุงเทพมหานคร: โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย

66. Hiroe,M. 1958. Umbelliferae of Asia (Excluding Japan). p.51. Kyoto: Maruzen.

67. Smitinand,T., and Larsen,K. eds. 1992. Flora of Thailand. Vol.5. Pt.4. pp.457-8. Bangkok: The Chutima Press.

68. Neufeldt,V. ed. 1988. Webster's New World Dictionary of Ameri can English. 3rd college ed. p.499. New York: Webster's New World.

69. Smitinand,T. 1980. Thai Plant Names (Botanical names-Vernacular names). p.364. Bangkok: Royal Forest Department.

70. Ma,X., Li,Z., and Chen,Y. 1989. Chemical composition of the volatile oil from *Foeniculum vulgare* Mill of Mienqien. Lanzhou Daxue Xuebao Ziran Kexueban 25(2): 68-71. (through CA 113: 74832w. 1990).

71. Arslan,N. Bayrak,A., and Akgul,A. 1989. The yield and components of essential oil in fennels of different origin (*Foeniculum vulgare* Mill.) grown in Ankara conditions. Herba Hung. 28(3): 27-31. (through CA 112: 156915u. 1990).

72. Vottero,L.R., Gros,E.G., and Retamar,J.A. 1981. Essential oil of *Foeniculum vulgare* (fennel). Essenze Deriv. Agrum. 51(1): 20-7. (through CA 96: 168514b. 1982).

73. Fujita,S., Asami,Y., and Nozaki,K. 1980. The constituents of the essential oils from *Foeniculum vulgare* Miller (Miscellaneous contributions to the essential oil of the plants from various territories. Pt. XLVI). Nippon Nogei

Kagaku Kaishi. 54(9): 765-7. (through CA 94: 90020z. 1981).

74. Carson,N.A. 1955. Volatile oil in spices. J. Assoc. Offic. Agr. Chemists 38: 548-52. (through CA 49: 12748e. 1955).

75. Clevenger,J.F. 1942. The determination of volatile oil in spices. J. Assoc. Official Agr. Chem. 25: 700-1. (through CA 36: 6259[1]. 1942).

76. Rodriguez,M., Maria,M., Pizzorno,M.T., and Albonico,S.M. 1982. Determination of anethol in fennel (*Foeniculum vulgare* Mill.) oil by proton magnetic resonance spectroscopy. Acta Farm. Bonaerense. 1(2): 75-9. (through CA 99: 76657j. 1983).

77. Antoni,H. 1959. Anethole from the oil of *Foeniculum vulgare*. Lucrarile inst. cercetari ailment 3: 99-109. (through CA 55: 9795a. 1961).

78. Naves,Y.R., and Tucaber,J. 1959. Present of anetholes in the essential oil of fennel of Yugoslavia. Comp.Rend. 248: 843-5. (through CA 53: 14424h. 1959).

79. Ivanov,S., Seher,A., and Schiller,H. 1979. Natural antioxidants IV.Antioxidants in the fatty oil of *Foeniculum vulgare* Miller. Seijen Anstrichm. 81(3): 105-7. (through CA 91: 35693j. 1979).

80. Nikolova,B., Tarandzhiska,R., and Chobanov,D. 1985. Determination of petroselenic acid, oleic acid, and the major triglyceride groups in some Umbelliferae seed oils. Dokl. Bolg. Akad. Nauk. 38(9): 1231-4. (through CA 104: 18725r. 1986).

81. kawai,N., Nishibe,Y., Ando,Y., and Ando,Y. 1990. Antimutagenic flavonoid extraction from *Foeniculum vulgare* fruits. Jpn. Kokai Tokkyo Koho JP 03,215,434[91,215,434]. (Cl.A61K35/78), 20 Sep 1991, Appl.90/11,197, 19 Jan 1990 (through CA 115: 263454b. 1991).

82. Ohta,T., and Miyazaki,T. 1959. Fenicularin, a quercetin-3-arabi-noside from the leaves of *Foeniculum vulgare*. Yakugaku Zasshi. 79: 986. (through CA 53: 20695a. 1959).

83. Yasuda,I., et al. 1988. Anthelminthic of Chinese medicines III. Letha Kenkyu Nenpo-Tokyo-toritsu Eisei 1 and inhibitory effects of Antyu-san and fennel components in Anisakis type I larvae. Kenkyusho 39: 24-7. (through CA 110: 147271n. 1989).

84. Malini,T., Vanithakumari,G., Megala, N., Anusya,S., Devi,K., and Elango,V. 1985. Effect of *Foeniculum* mill seed extract on the genital organs of male and female rats. Indian J. Physiol. Pharmacol. 29(1): 21-6. (through CA 103: 172271a. 1985).

85. Albert-Puleo,M. 1980. Fennel and anise as estrogenic agents. J. Ethnopharmacol. 2(4): 337-44. (through CA 94: 36151e. 1981).

86. Moon,C.K., Park,K.S., Lee,S.H., and Yoon,Y.P. 1985. Antitumor activities of several phytopolysaccharides. Arch. Pharmacal. Res. 8(1): 42-4. (through CA 103: 134646u. 1985).

87. Haginawa,J., Harada,M., and Morishita,I. 1963. Pharmacological study on crude drugs, VII.Properties of essential oil

components of aromatics and their pharmacological effects on mouse intestine. Yakugaku Zasshi. 83: 624-8. (through CA 60: 999a. 1964).

88. Abdullin,K.K. 1962. Bactericidal effect of essential oils. Uch. Zap. Kazansk. Vet. Inst. 84: 75-9. (through CA 60: 11843b. 1964).

89. Capek,A. 1956. Phytoncides of anise and fennel. Prumysl Potravin 7: 260-2. (through CA 50: 15739d. 1956).

90. Skovronskii,V.A. The effect of caraway, anise and of sweet fennel on urine elimination. 1953. Sbornik Nauch. Trudov L'vov. Vet.-Zootekh. Inst. 6: 275-83., 1955. Referat. Zhur. Khim. Biol.Khim. No.10484. (through CA 50: 7310i. 1956).

91. Balansard,J. 1951. A study of hepato-renal diuretics. Med. Trop. 11: 622-6. (through CA 46: 1716b. 1952).

92. Smitinand,T. 1980. Thai Plant Names (Botanical names-Vernacular names). p.22. Bangkok: Royal Forest Department.

93. Hiroe,M. 1958. Umbelliferae of Asia (Excluding Japan). p.182. Kyoto: Maruzen.

94. Smitinand,T., and Larsen,K. eds. 1992. Flora of Thailand. Vol. 5. Pt.4. p.456. Bangkok: The Chutima Press.

95. เรืองรังษี,น. 2534. เครื่องเทศ. หน้า 179. กรุงเทพมหานคร: โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย

96. Neufeldt,V. ed. 1988. Webster's New World Dictionary of Ameri can English. 3rd college ed. p.386. New York: Webster's New World.

97. Schmidt,H. 1953. Dihydrocarvone, a characteristic component of dill oil. Ather. Ole, Riechstoffe, Parfumer, Essenz. U. Aromen. 3: 75-6. (through CA 48: 6993b. 1954).

98. Embong,M.B., Hadziyev,D., and Molnar,S. 1977. Essential oils from spices grown in Alberta dill seed oil, *Anethum graveolens* L. (Umbelliferae). Can. Inst. Food Sci. Technol. J. 10(3): 208-14. (through CA 87: 182846g. 1977).

99. Hodisan,V., Popescu,H., and Fagarasan,E. 1980. Contrib. Bot. Univ. Babes-Bolyai Cluj, Gradina Bot. 263-6. (through CA 94: 136149d. 1981).

100. Zheng,G.Q., Kenney,P.M., and Lam,L.K.T. 1992. Anethofuran, carvone, limonene: potential cancer chemopreventive agents from dill weed oil and caraway oil. Planta Med. 58(4): 338-41. (through CA 117: 184286m. 1992).

101. Menon,K.N., and Raman,P.S. 1953. Petroselinic acid:occurrence in some umbelliferae seed fats. Proc. Indian Acad. Sci. 38A: 128-31. (through CA 48: 4231d. 1954).

102. Zaraiskaya,E.N., and Borisyuk,Y.G. 1957. Essential oil of the seeds of dill (*Anethum graveolens*). Trudy Khar'kov. Farm. Inst. No.1: 190-3., 1959. Referat. Zhur. Khim., Biol. Khim. Abstr. No. 14095. (Through CA 53: 22753i. 1959).

103. Dranik,L.I. 1970. Vicenin from *Anethum graveolens* fruits. Khim. Prir. Soedin. 6(2): 268. (through CA 73: 84627c. 1970).

104. Stepanenko,G.A., Umarov,A.U., and Markman,A.L. 1974. Fatty acid composition of oils from *Anethum graveolens* seeds during

their ripening. Khim. Prir. Soedin. (4): 513. (through CA 82: 54314s. 1975).

105. Carter,G.T. 1976. Structure of oligomycin A and C, II.Structure of three isomeric octadecadienoic acids possesing divalent cation ionophoretic activity, III.Insecticidal components of dill and anise plants. Doctoral Dissertation. University of Wisconsin. 248 pp. (Avail. Xerox Univ. Microfilms, Ann Arbor, Mich. order No.76-15,982. from Diss.Abstr. Int.B. 1976. 37(2): 766-7. (through CA 85: 11436e. 1976).

106. Belafi-Rethy,K., and Kerenyi,E. 1977. Study of the composition of the indigenous foreign essential oils, VI.Coumaran derivatives in dill plant essential oil. Acta Chim. Acad. Sci. Hung. 94(1): 1-9. (through CA 88: 110365x. 1978).

107. Teuber,H., and Herrmann,K. 1978. Flavonol glycosides of dill (*Anethum graveolens* L.) leaves and fruits, II.Phenolics of spices. Z. Lebensm. Unters. Forsch. 167(2): 101-4. (through CA 90: 166710q. 1979).

108. Fukuoka,M., et al. 1980. Characterization of mutagenic principles and carcinogenicity test of dill weed and seeds. J.Pharmacobio. Dyn. 3(5): 236-44. (through CA 93: 126767u. 1980).

109. Glowniak,K., and Doraczynska,A. 1984. Study of the benzene extract obtained from dill fruits (*Anethum graveolens*). Ann. Univ. Mariae Curie-Sklodowska Sect.D. 37: 251-7. (through CA 102: 109855h. 1985).

110. Maruzzella,J.C., and Ligouri,L. 1958. The *in vitro* antifungal activity of essential oils. J. Am. Pharm. Assoc. 47: 250-4. (through CA 52: 10507b. 1958).

111. Chaurasia,S.C., and Kher,A. 1978. Inhibitory effects of essential oils of three medicinal plants against various fungi. Indian Drugs Pharm. Ind. 13(1): 7-9. (through CA 89: 123746t. 1978).

112. Hiroe,M. 1958. Umbelliferae of Asia(Excluding Japan). p.55. Kyoto: Maruzen.

113. Neufeldt,V., ed. 1988. Webster's New World Dictionary of American English. 3rd college ed. p.984. New York: Webster's New World.

114. Kim,Y.H., Kim,K.S., and Hong,C.K. 1990. Volatile components of parsley leaf and seed (*Petroselinum crispum*). Han'guk Nonghwa Hakhoechi 33(1): 62-7. (through CA 113: 189976p. 1990).

115. Chaudhary,S.K., et al. 1986. Oxypeucedanin, amajor furocoumarin in parsley, *Petroselinum crispum*. Plant Med. 37(6): 462-4. (through CA 106: 135281v. 1987).

116. Ulrich,B. 1973. Fungicidal effect and several side-effects in benomyl use. Nachrichtenbl. Pflanzensschutzdienst DDR. 27(8): 161-5. (through CA 80: 44622k. 1974).

117. Stermitz,F.R., and Thomas,R.D. 1973. Separation of furocoumarins by high-pressure liquid chromatography. J. Chromatog. 77(2): 431-3. (through CA 79: 2193v. 1973).

118. Oka,Y., Kiryama,S., and Yoshida,A. 1973. Sterol composition of vegetables. Eiyo To Shokuryo 26(2): 121-8. (through

CA 97: 134358n. 1982).

119. Reschke,A. 1983. Capillary gas chromatographic determination of rosmarinic acid in leafy spices. Z. Lebensm.-Unter. Forsch. 176(2): 116-19. (through CA 98: 141942u. 1983).

120. Ceska,O., Chaudhary,S.K., Warrington,P.J., and Ashwood-Smith,M.J. 1986. Photoactive furocoumarins in fruits of some umbellifers. Phytochemistry 26(1): 165-9. (through CA 106: 64370k. 1987).

121. Ivanisenko,V.G., et al. 1987. Chemical composition and biologicalactivity of parsley extracts. Fiziol. Akt. Veshchestva 19: 75-7. (through CA 108: 52829v. 1988).

122. Balansard,J. 1951. A study of the hepato-renal diuretics. Med. trop. 11: 622-6. (through CA 46: 1716b. 1952).

123. Abdullin,K.K. 1962. Bactricidal effect of essential oils. Uch. Zap. Kazansk. Vet. Inst. 84: 75-9. (through CA 60: 11843b. 1964).

124. Zdzislaw,R. 1962. Essential oil from native parsley fruit. Acta Polon. Pharm. 19(5): 383-91. (through CA 60: 13091d. 1964).

125. Akhtar,M.A., Nasir,K., Ashraf,M., Moin-Ud-Din,M., and Khan,M.R. 1982. Physicochemical study of essential oil from parsley seeds. J. Nat. Sci. Math. 22(2): 81-8. (through CA 98: 122860z. 1983).

126. Medrana,M.A., and Bartolome,E.R. 1978. Flavonoid glycosides in parsley *Petroselinum crispum* Mill. seeds. An. Asoc. Quim. Argent. 66(3): 169-72. (through CA 92: 18813b. 1980).

127. เรืองรังษี,น. 2534. เครื่องเทศ. หน้า 174. กรุงเทพมหานคร: โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย

128. Neufeldt,V., ed. 1988. Webster's New World Dictionary of Ameri can English. 3rd college ed. p.55. New York: Webster's New World.

129. Hornok,L. 1992. Cultivation and Processing of Medicinal PLants. pp.145-6. Chichester: John Wiley & Sons.

130. Farrell,K.T. 1985. Spices, condiments, and seasonings. p.32-33. New York: Van Nostrand Reinhold Co.

131. Clevenger,J.F. 1939. Volatile oils of anise, caraway, celery fruit, coriander, cubeb, and fennel. Bull. Natl. Formulary Comm. 7: 293-4. (through CA 33: 7040^{8}. 1939).

132. Rept.Am.Pharm.Assoc., Lab. 1939. The volatile oil of anise, caraway, celery fruit, coriander, cubebs and fennel. Bull. Natl. Formulary Comm. 7: 231-3. (through CA 33: 5120^{7}. 1939).

133. Fischer,L. Tornow,P.A., and Proper,B.L. 1945. The content and physical properties of certain volatils oils. Bull. Natl. Formulary Comm. 13: 6-10. (through CA 39: 1962^{8}. 1945).

134. Maurel,A., and Vella,A.M. 1949. Determination of total essential oils in anise liquers. Ann. fals. et fraudes 42: 319-26. (through CA 44: 3212a. 1950).

135. Calcandi,V., Ciropol,J., and Georgescu,E. 1961. Essential oils of several umbelliferous plants grown in Romania. Pharmazie 16: 331-4. (through CA 57: 4776h. 1962).

136. Mori,D. 1948. The determination of anethole in oil of anise. Riv. ital. essenze,profumi, piante offic., olii vegetali, saponi 29: 360., 1948. Chimie & industrie 59: 160. (through CA 42: 7935f. 1948).

137. Capek,A. 1956. Phytocides of anise and fennel. Prumysl Potravin 7: 260-2. (through CA 50: 15739d. 1956).

138. Brieskorn,C.H., and Zimmermann,K. 1965. Occurrence of pristane in the anise fruits. Experientia 21(7): 385. (through CA 63: 15221c. 1965).

139. Mohamed,Y.A., Abdel-Salam,N.A., El-Sayed,M.A., and Abdel-Salam, M.A. 1976. Spectrophotometric determination of certain volatile oils, Part III. Assay of anethole in volatile oils of anise and fennel. Indian J. Pharm. 38(5): 117-9. (through CA 86: 145987u. 1977).

140. Marcus,C., and Lichtenstein,E.P. 1979. Biologically active components of anise:toxicology and interactions with insecticides in insects. J. Agric. Food Chem. 27(6): 1217-23. (through CA 92: 53312j. 1980).

141. Luzina,L.V., Tanasienko,F.S., and Berestovaya,M.M. 1982. Anise as a source of anethole. Tr. VNII Efiromaslich. Kultur 14: 158-64. (through CA 99: 76661f. 1983).

142. Ceska,O., Chaudhary,S.K., Warrington,P.J., and Ashwood-Smith,M.J. 1986. Photoactive furocoumarins in fruits of some umbellifers. Phytochemistry 26(1): 165-9. (through CA 106: 64370k. 1987).

143. Cortina,B.R., and Montes,A.L. 1954. New method for investigating thujone in alcoholic drinks (absinthe, anisette,

aperitifs, etc.). Anales asoc. quim. argentina 42: 213-22. (through CA 49: 7804e. 1955).

144. Dewein,H. 1955. Investigation of absinthe substances (6-methoxy- and 6-ethoxy-2-methylcoumarone). Seifen-Ole Fette-Wachse 81: 547-9. (through CA 50: 9691f. 1956).

145. Kartnig,T., and Scholz,G. 1969. Component lipids of the fruits of *Pimpinella anisum* and *Carum carvi*. Fette, Seifen, Anstrichm. 71(4): 276-80. (through CA 71: 57561d. 1969).

146. Zaraiskaya,E.N., and Borisyuk,Y.G. 1956. Sbornik 185-9, 1958. Referat. Zhur. Khim. Abstr.No. 2689. (through CA 53: 14548d. 1959).

147. Brieskorn,C.H., and Mosandl,A. 1970. Caffeic acid containing protein from seeds of umbelliferae. Tetrahedron Lett. 109-11. (through CA 72: 97321c. 1970).

148. _____, Hagen,P., and Mosandl,A. 1972. o-Diphenol proteins from the fruit of anise and caraway. Z. Lebensm. Unters-Forsch. 148(2): 83-9. (through CA 76: 152260s. 1972).

149. Schulz,J.M., and Herrmann,K. 1980. Occurrence of hydroxybenzoic acids and hydroxycinnamic acids in spices, IV.Phenolics of spices. Z. Lebensm. Unters. Forsch. 171(3): 193-9. (through CA 93: 202865s. 1980).

150. Carter,G.T. 1976. Structure of oligomycin A and C, II.Structure of three isomeric octadecadienoic acids possesing divalent cation ionophoretic activity, III.Insecticidal components of dill and anise plants. Doctoral Dissertation. University of Wisconsin. 248 pp. (Avail. Xerox Univ.

Microfilms, Ann Arbor, Mich. order No.76-15,982. from Diss.Abstr. Int.B. 1976. 37(2): 766-7. (through CA 85: 11436e. 1976).

151. Kunzemann,J., and Herrmann,K.Z. 1977. Isolation and identification of flavon(ol)-o-glycosides in caraway. (*Carum carvi* L.), fennel (*Foenuculum vulgare* Mill.), anise (*Pimpinella anisum* L.), and coriander (*Coriandrum sativum* L.) and of flavone-C-glycosides in anise, I.Phenolics of spices. Lebensm. Unters. Forsch. 164(3): 194-200. (through CA 87: 166146y. 1977).

152. El-Moghazi,A.M., Ali,A.A., Ross,S.A., and Mottaleb,M.A. 1979. Flavonoids of *Pimpinella anisum* L. Fitoterapia 50(6): 267-8. (through CA 93:66107s. 1980).

153. _____, Ali,A.A., Ross,S.A., and Mottaleb,M.A. 1981. Flavonoids of *Pimpinella anisum* L. growing in Egypt. Herba Pol. 27(1): 13-17. (through CA 95: 129408e. 1981).

154. Dirks,U., and Herrmann,K. 1984. 4-(ß-D-Glucopyranosyloxy)benzoic acid, as a characteristic phenolic constituent of the Apiaceae. Phytochemistry 23(8): 1811-12. (through CA 102: 42837h. 1985).

155. Haranath,P.S.R.K., and Akther,M.H. 1987. Acetylcholine and choline in common spices. Phytother. Res. 1(2): 91-2. (through CA 109: 5439d. 1988).

156. Galloway,L.D. 1952. Essential oils as vapor phase antiseptics against mold fungi. Perfumery Essent. Oil Record 43: 359,395. (through CA 47: 3526c. 1953).

157. Okazaki,K., and Oshima,S. 1953. Antibacterial activity of higher plants, XXIV.Antimicrobial effect of essential oils. J. Pharm. Soc. Japan 73: 344-7. (through CA 47: 7161h. 1953).

158. Skovronskii,V.A. 1955. Sbornik Nauch. Trudov L'vov. Vet. Zootekh. Inst. 6: 275-83. (through CA 50: 7310i. 1956).

159. Maruzzella,J.C., and Ligouri,L. 1958. The in vitro antifungal activities of essential oils. J. Am. Pharm. Assoc. 47: 250-4. (through CA 52: 10507b. 1958).

160. Shukla,H.S., and Tripathi,S.C. 1987. Antifungal substances in the essential oil of anise (*Pimpinella anisum* L.). Agric. Biol. Chem. 51(7): 1991-3. (through CA 107: 112525j. 1987)

161. Sharaf,A., and Goma,N. 1965. Phytoestrogens and their antagonism to progesterone and testosterone. J. Endocrinol. 31(3): 289-90. (through CA 62: 12118a. 1965).

162. Albert-Puelo,M. 1980. Fennel and anise as estrogenic agents. J. Ethnopharmacol. 2(4): 337-44. (through CA 94: 36151e. 1981).

163. Shashikanth,K.N., and Hosono,A. 1986. *In vitro* mutagenicity of tropical spices to streptomycin-dependent strains of *Salmonella typhimurium* TA 98. Agric. Biol. Chem. 50(11): 2947-8. (through CA 106: 31494a. 1987).

164. Shukla,H.S., Upadhyay,P.D., and Tripathi,S.C. 1989. Insect repellent property of essential oils of *Foeniculum vulgare*, *Pimpinella anisum* and anethole. Pesticides 23(1): 33-5. (through CA 110: 211265t. 1989).

165. เรืองรังษี,น. 2534. เครื่องเทศ. หน้า 184. กรุงเทพมหานคร: โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย.

166. Smitinand,T. 1980. Thai Plant Names (Botanical names-Vernacular names). p.69. Bangkok: Royal Forest Department.

167. Neufeldt,V., ed. 1988. Webster's New World Dictionary of Ameri can English. 3rd college ed. p.210. New York: Webster's New World.

168. Hiroe,M. 1958. Umbelliferae of Asia(Excluding Japan). pp.71-2. Kyoto: Maruzen.

169. Clevenger,J.F. 1942. The determination of volatile oil in spices, assay of caraway and fennel seeds. J. Assoc. Official Agr. Chem. 25: 700-1. (through CA 36: 6259[1]. 1942).

170. Schmidt,H. 1950. The constituents of caraway oil, a contribution to the configuration of the dihydrocarveols. Chem. Ber. 83: 193-200. (through CA 44: 7278i. 1950).

171. El-deeb,M.S., Karawya,M.S., and Wahba,S.K. 1962. Chromatographic analysis of caraway and lemon oils. J. Pharm. Sci. U. Arab Rep. 3(1): 81-9. (through CA 60: 6697f. 1964).

172. Von Schantz,M., and Ek,B.S. 1971. Structure of essential oils in *Carum carvi* (caraway). Sci. Pharm. 39(2): 82-101. (through CA 75: 106190a. 1971).

173. Salveson,A., and Baerheim,S.A. 1976. Gas-liquid chromatographic separation and identification of the constituents of caraway seed oil, I.The monoterpene hydrocarbons. Planta Med. 30(1): 93-6. (through CA 85: 130361j. 1976).

174. Strauss,D. 1977. The essential oil content in ground spices. Dtsch. Lebensm.-Rundsch. 73(10): 332-4. (through CA 88: 35965n. 1978).

175. Koedam,A., Scheffer,J.J.C., and Anders,B.S. 1979. Comparison of isolation procedures for essential oils, II.Ajowan, caraway, coriander, and cumin. Z. Lebensm. Unters. Forsch. 168(2): 106-11. (through CA 90: 150377a. 1979).

176. Lawrence,B.M. 1989. Progress in essential oils. Perfum. Flavor. 14(2): 47-49. (through CA 111: 12314d. 1989).

177. Pohloudek-Fabini,R., and Goeckeritz,D. 1963. Microanalysis of essential oils, XI.Microanalysis of carvone. Nahrung 7 No.2: 122-38. (through CA 58: 13706h. 1963).

178. Von Schantz,M., and Huhtikangas,A. 1971. Development of limonene and carvone in caraway, *Carum carvi*. Phytochemistry 10(8): 1787-93. (through CA 75: 126700v. 1971).

179. Ravid,U., Bassat,M., Putieevsky,E., Weinstein,V., and Ikan,R. 1987. Isolation and determination of optically pure carvone enantiomers from caraway (*Carum carvi* L.), dill (*Anethum graveolens* L.), spearmint (*Mentha spicata* L.) and *Mentha longifolia* (L.) Huds. Flavour Fragrance J. 2(3): 95-7. (through CA 109: 20290s. 1988).

180. Zaraiskaya,E.N., and Borisyuk,Y.G. 1956. Fatty oils of the fruits of caraway (*Carum carvi*) and anise (*Pimpinella anisum*). Sbornik 185-9. (through CA 53: 14548d. 1959).

181. Kunzemann,J., and Herrmann,K. 1977. Isolation and identification of flavone(ol)-O-glycosides in caraway (*Carum carvi* L.), fennel (*Foeniculum vulgare* Mill.), anise (*Pimpinella*

anisum L.) and coriander(*Coriandrum sativum* L.) and of flavone-C-glycosides in anise, I.Phenolics of spices. Z. Lebensm. Unters. Forsch. 164(3): 194-200. (through CA 87: 166146y. 1977).

182. Rothbaecher,H., and Suteu,F. 1972. Isomeric carveols in the essential oil of *Carum carvi* of Rumanian origin. Pharmazie 27(5): 340-1. (through CA 77: 72543s. 1972).

183. Skovronskii,V.A. 1953. The effect of caraway, anise, and of sweet fennel on urine elimination. Sbornik Nauch. Trudov L'vov. Vet. Zootekh Inst. 6: 275-83. 1955. Referat. Zhur. Khim. Biol. Khim. No.10484. (through CA 50: 7310i. 1956).

184. Maruzzella,J.C., and Ligouri,L. 1958. The *in vitro* antifungal activity of essential oils. J. Am. Pharm. Assoc. 47: 250-4. (through CA 52: 10507b. 1958).

185. Ibragimov,G.G., and Vasilev,O.D. 1985. Antifungal activity of essential oils. Azerb. Med. 62(4): 44-8. (through CA 103: 27056e. 1985).

186. Koscik,A. 1955. Antibiotic propeerties of vegetable oils. Roczniki Akad. Med. Biatymstoku 1: 227-36. (through CA 53: 11512a. 1959).

187. Rasheed,A., and Chaudhri,K.N. 1974. Antibacterial activity of essential oils against certain pathogenic microorganisms. Pak. J. Sci. Res. 26: 25-36. (through CA 86: 84191z. 1977).

188. Brandt,W. 1985. Relaxant effect on tracheal and ileal smooth muscle of the guinea pig. Arzneim. Forsch. 35(1A):

408-14. (through CA 102: 143009v. 1985).

189. Farag,R.S., Daw,Z.Y., Hewedi,F.M., and El-Baroty,G.S.A. 1989. Antimicrobial activity of some Egyptian spice essential oils. on linoleic acid oxidation in aqueous media. J. Am. Oil Chem. Soc. 66(6): 792-9. (through CA 111: 38164e. 1989).

190. Zheng,G.Q., Kenney,P.M., and Lam,L.K.T. 1992. Anethofuran, carvone, and limonene: potential cancer chemopreventive agents from dill weed oil and caraway oil. Planta Med. 58(4): 338-41. (through CA 117: 184286m. 1992).

191. Hutchinson,J. 1973. The Families of Flowering Plants. p.562. Oxford: Clarendon Press.

192. Hooker,J.D. 1885. Flora of British India. Vol.IV. pp.705-7. Kent: L.Reeve & Co.

193. Pendse,G.P. 1937. Chemical examination of the seeds of Isabghol, *Plantago ovata* Forsks, II.Supplementary note. Proc. Natl. Acad. Sci.India 7: 137-9. (through CA 32: 6087^2. 1938).

194. Gelpi,E., Schneider,H., Doctor,V.M., Tennison,J., and Oro,J. 1969. Gas chromatographic-Mass spectrometric identifications of the hydrocarbons and fatty acids of *Plantago ovata* seeds. Phytochemistry 8(10): 2077-81. (through CA 72: 708y. 1970).

195. Atal,C.K., Kapur,K.K., and Siddiqui,H.H. 1964. Indian seed oils, I.Preliminary screening for linoleic acid-rich oils. Indian J. Pharm. 26: 163-4. (through CA 61: 12327d. 1964).

196. Dolya,V.S., Taldykin,O.E., and Shkurupii,E. 1976. Fatty oil of four plants of the *Digitalis* and *Plantago* genera. Farm. Zh. (Kiev) (4): 83-7. (through CA 85: 166478s. 1976).

197. Laidlaw,R.A., and Percival,E.G.V. 1950. Seed mucilages, V. Examination of a polysaccharide extracted from the seeds of *Plantago ovata* by hot water. J. Chem. Soc. 528-34. (through CA 44: 7782g. 1950).

198. _____, and Percival,E.G.V. 1950. Seed mucilages, III. Examination of a polysaccharide extracted from the seeds of *Plantago ovata*. J. Chem. Soc. 1600-7. (through CA 44: 1913h. 1950).

199. Erskine,A.J., and Jones,J.K.N. 1956. Fractionation of polysaccharides. Can. J. Chem. 34: 821-6. (through CA 51: 7746g. 1957).

200. Blouch,A.K., and Hujjatullah,S. 1969. Amino acid composition of the proteins from some edible wild seeds. Sci. Res. (Dacca, Pak.) 6(1-2): 1-6. (through CA 73: 2813y. 1970).

201. Aynehchi,Y., Sormaghi,M.H.S., Amin,G.H., soltani,A., and Qumehr,N. 1982. Survey of Iranian plants for saponins, alkaloids, flavonoid and tannins,II. Int. J. Crude Drug Res. 20(1): 61-70.

202. Sharma,P.K., and Koul,A.K. 1986. Mucilage in seeds of *Plantago ovata* and its wild allies. J.Ethnopharmacol. 17(3): 289-95. (through CA 106: 30057y. 1987).

203. Khanna,M., Nandi,R.C., Singh,S., Jain,G.K., and Sarin,J.P.S. 1988. Standardization of pure Isapgol (*Plantago ovata*)

mucilage for pharmaceutical use. Indian J. Pharm. Sci. 50(4): 238-40. (through CA 110: 82344s. 1989).

204. Khorana,M.L., Prabhu,V.G., and Rajarama Rao,M.R. 1958. Pharmacology of an alcohol extract of *Plantago ovata*. Indian J. Pharm. 20: 3-6. (through CA 53: 7433b. 1959).

205. Wasicky,R. 1961. Investigations of *Plantago ovata*, *P.psyllium* and *P.major* variety cruenta as laxatives. Planta Med. 9: 232-44. (through CA 56: 1526a. 1962).

206. Garvin,J.E., Forman,D.T., Eiseman,W.R., and Phillips,C.R. 1965. Lowering of human serum cholesterol by an oral hydrophillic colloid. Proc. Soc. Exptl. Biol. Med. 120(3): 744-6. (through CA 64: 8831e. 1966).

207. Howard,A.N., and Marks,J. 1983. Hypocholesterolemic effect of dietary fibers: studied on the mechanism of action. Arterioscler. Brain Dis. 203-5. (through CA 100: 67113r. 1984).

208. Hebert,B.E., and Ellery,K.W. 1948. Textbook of Practical Pharmacognosy. pp.363-5. London: Bailliere, Tindall and Cox.

209. Stahl,E. 1969. Thin-Layer Chromatography. 2nd ed. pp.855,870, 873-4,904. New York: Springer-Verlag.

210. Weast,R.C. ed. 1974. Handbook of chemistry and physics. 55th ed. Sect.C. pp.75-542. Cleaveland: CRC Press.

APPENDIX

Test reagent for microscopy

chloral hydrate

A two in one solution of chloral hydrate in distilled water. The solution is used to clarify the section.

hydrochloric acid

The concentrated acid of the B.P.; S.G. 1.16

iodine solution

An aqueous solution of iodine and potassium iodide containing 18 g. of potassium iodide and 12.69 g. og iodine in 1000 ml of water. The solution is used to stain aleurone grains to yellow.

phloroglucin

A 1% solution of phloroglucin in 90% alcohol.

phloroglucin solution when mixed with conc. hydrochloric acid used to stain lignified tissue to red.

ruthenium red solution

A freshly prepared solution of 0.008 g. of ruthenium red in 10 ml. of a 10% w/v aqueous solution of lead acetate. The solution is used to stain mucilage to pink.

tincture of alkanna

A one in five maceration of bruised alkanet root in 90% alcohol. The solution is used to stain oil globules to red.

Test reagents for TLC

Dragendorff's reagent

Solution a : 0.85 g basic bismuth nitrate is dissolved in a mixture of 10 ml acetic acid and 40 ml water.

Solution b : A solution is made of 8 g potassium iodide in 20 ml water.

Stock solution : Equal volumes of a and b are mixed (can be stored for a long time in dark glass vessels).

Spray reagent : 1 ml stock solution is mixed with 2 ml acetic acid and 10 ml water before use.

Kedde reagent

spray reagent I : 2% methanolic solution of 3,5-dinitrobenzoic acid.

spray reagent II : 5.7 g. potassium hydrixide are dissolved in methanol and the volume made up to 100 ml with it.

Procedure: The layer is first lightly sprayed with I and then with excess II. Blue-violet spots appear.

Leibermann-Burchard solution

5 ml acetic anhydride are carefully mixed under cooling with 5 ml conc. sulphuric acid; this mixture is added cautiously to 50 ml absolute ethanol with cooling. The solution should be freshly prepared before used. The solution is used for the detection of cholesterol and ester, a number of steroids and triterpene glycosides.

vanillin-sulphuric acid

1 g vanillin is dissolved in 100 ml conc. sulphuric acid. The solution is used to detect higher alcohols, phenols, steroids and essential oils.

VITA

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