POTENTIAL ANTICANCER AGENTS XXXII. HYDROQUINONE FROM *IPOMOPSIS AGGREGATA*[1]

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In earlier publications concerning our studies on the New World plant *Ipomopsis aggregata* (Pursh) V. Grant (Polemoniaceae) for its antineoplastic principles, we described the isolation and structure determination of a new cucurbitacin (2) and a new biscoumarin, ipomopsin (3). Continuing separation of the active chromatographic fractions led to the isolation of a simple compound displaying cytotoxic activity (KB ED_{50} 3.8 μg/ml, P-388 ED_{50} 2.2 μg/ml) (4), which was identified as hydroquinone. Although this compound (NSC-09247) has been tested extensively for its anticancer activity,[2] this represents the first report of its isolation as a result of bioactivity-directed fractionation.

Hydroquinone is a widespread plant constituent having been isolated previously[3] from the following plant families: Aquifoliaceae, Athyriaceae, Bignoniaceae, Buxaceae, Crassulaceae, Compositae, Ericaceae, Gramineae, Labiatae, Leguminosae, Loganiaceae, Pinaceae, Polygonaceae, Pyrolaceae, Rosaceae, Rubiaceae, Rutaceae, Saxifragaceae, Solanaceae, and Umbelliferae. This is the first reported isolation of this compound from the Polemoniaceae.

EXPERIMENTAL[4]

PLANT MATERIAL.—The combined roots-stems-leaves-flowers-fruits of *Ipomopsis aggregata* (Polemoniaceae) were collected in Idaho in July 1980.

FRACTIONATION AND ISOLATION.—The extraction and fractionation of the plant material were described previously (2). Hydroquinone (23 mg, 0.00023%) was isolated from the same fraction as ipomopsin (3). The isolate was identified by comparison of its physical (mp, mmp, co-tlc) and spectral (ir, uv, ms, and pmr)[5] properties with those of an authentic sample.[6]

ACKNOWLEDGMENTS

This work was supported, in part, by contract CM 97295 and grant CA 20164 from the Division of Cancer Treatment, National Cancer Institute, Bethesda, MD. We would like to thank the Economic Botany Laboratory, BARC-East, U.S.D.A., Science and Education Administration, Beltsville, MD, funded by the National Cancer Institute, for the provision and identification of the plant material.

We also wish to thank Dr. W. Lichter, University of Miami School of Medicine, Miami, FL, for the supply of a KB cell-line, and Ms. L.-J. Lin and Mr. G.T. Marshall, of this department, for the pmr and mass spectral data, respectively.

LITERATURE CITED

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[1]For paper XXXI in this series, see Arisawa et al. (1).

[2]Hydroquinone (NSC-09247) has shown activity in the following test systems, according to established protocols (4): P-388 lymphocytic leukemia (T/C 159-141% at 100 mg/kg, 4 tests), L1210 lymphoid leukemia (T/C 141% at 100 mg/kg), Lewis Lung carcinoma (T/C 201% at 50 mg/kg), CX-1 Colon xenograft (T/C 173% at 50 mg/kg), MX-1 Breast xenograft (T/C 139% at 25 mg/kg) and Friend virus leukemia (T/C 242% at 37 mg/kg). No activity was observed in the B16 melanocarcinoma, Adenocarcinoma 755, $CD8F_1$ mammary tumor, Colon 26, Colon 38, Hepatoma 129, LX-1 lung xenograft, M5076 ovarian carcinoma, Sarcoma 180, S-91 Cloudman melanoma, Dunning leukemia, Walker carcinosarcoma 256 and HS 1 human sarcoma test systems. Data were provided by Dr. M. Suffness, Division of Cancer Treatment, National Cancer Institute.

[3]Details are available on request to the authors.

[4]General experimental conditions have been described previously (1,3).

[5]Spectral data are available from the authors on request.

[6]Matheson, Coleman and Bell, Inc., Norwood, NJ.

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Received 19 May 1983