Crocus sativus

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1964

The diffusion of hydrogen in cyclohexane at increased pressures. N. E. Khazanova and L. R. Linshits. *Khim. Prom.* **1963**(8), 579–82. An app. for measuring the diffusion coeff. (D) of H_2 in cyclohexane, based on the capillary method, is described. The values of $D \times 10^5$ as a function of pressure (in parentheses) are: at 60° 17.2 (164), 16.6 (97), and 16.0 (52); at 100° 28.3 (173), 28.5 (98), and 29.2 (51); and at 120° 33.2 (157) and 30.5 cm.²/sec. (96 atm.). The activation energy of the diffusion process is ~2900 cal./mole. 16 references. A. Aladjem

Activity measurements in oxide solid solutions: the systems NiO–MgO and NiO–MnO in the temperature interval 1100–1300°. W. C. Hahan, Jr., and A. Muan (Pennsylvania State Univ., University Park). *Phys. Chem. Solids* 19(3/4), 338–48 (1961). Activities of NiO in NiO–MgO and NiO–MnO solid were measured by equilibrating oxide samples with pure metallic Ni in atm. of known O partial pressures. NiO–MgO is ideal, within limits of exptl. error, whereas NiO–MnO shows considerable pos. deviation from ideality. RCCK

1965

None

1966

Application of infrared spectroscopy in food analyses. I. Spectroscopy in the intermediate infrared range (3–15 μm). Rudolf Kohn (Deut. Forschungsanstalt Lebensmittelchem., Munich, Ger.). *Z. Lebensm.-Untersuch. Forsch.* 129(1), 28–40 (1965)(Ger). A review of application of ir to analyses of fat and fat assocd. materials, carbohydrates, alcs., proteins, amino acids and nucleic acids, aroma material and carbonyl compds., vitamins and provitamins, tobacco constituents, pectin, cellulose additives, synthetic caffeine, theobromine, theophylline, and xanthine, preservatives and antioxidants, coloring materials, h thickeners, emulsifiers, minerals, food coatings, gases, detergents, synthetic resins, solvents, pesticides, antibiotics, fibers, and habit-forming drugs. 230 references. M. M. Piskur

Color additives; paprika, paprika oleoresin, turmeric, turmeric oleoresin, saffron, fruit juice, vegetable juice. Anon. *Federal Register* **31**, 1063–5(Jan. 27, 1966)(Eng). The title materials with or without approved diluents may be used under the Federal Food, Drug, and Cosmetic Act for coloring of foods without a requirement for certification. The oleoresins are obtained by extn. using any 1 or combination of the following solvents: Me_2CO, EtOH, ethylene dichloride, C_6H_{12}, iso-PrOH, MeOH, methylene chloride, and trichloroethylene. William Horwitz

1967 & 1968

None

1969 (E)

638e TAS-method for the microanalysis of important constituents of saffron. Stahl, Egon; Wagner, Claus (Univ. Saarlandes, Saarbruecken, Ger.). *J. Chromatogr.* 1969, 40(2), 308 (Eng); cf. S. (1968). At 200° with a reaction time of 1 min. a fission of picrocrocin occurred and the free aglycon, a 2,6,6-trimethyl-1,3-cyclohexadiene-1-aldehyde designated safranal, appeared at once on a thin-layer chromatography (TLC) plate. The orange-red carotenoids remained in the stigma. After treating powd. saffron stigmas with an ether soln. of diazomethane, fission of crocin occurred followed by methylation to the *trans*-dimethyl ester of crocetin. The sepn. was accomplished by TLC on Silica Gel HF_{254} using C_6H_6-$CHCl_3$ (80:20) under standard conditions.
D. V. Anders

1970 (C)

88941c Detection of adulteration in saffron. Qureshi, Tehseen; Ehsan, Ali (West Reg. Lab., P.C.S.I.R., Lahore, Pakistan). *Sci. Ind. (Karachi)* 1967, 5(4), 581–4 (Eng). A review. The purity of saffron should be evaluated by the glucoside and photometric tests, which must be combined with microscopic, morphol., and organoleptic tests, as well as with moisture and ash anal. to give a true indication of quality. 7 refs.
Roy Solkot

1971

None

1972 (U)

137397u Observation of mineral microstructures of some flowers using low-temperature plasma ashing. Umemoto, K.; Hozumi, K. (Kyoto Coll., Kyoto, Japan). *Mikrochim. Acta* 1972, (5), 748–57 (Eng). Three specimens of medicinal flowers, *Humulus lupulus*, *Carthamus tinctorius*, and *Crocus sativus*, were calcinated in a low-temp. O plasma excited by a high-frequency elec. field under low pressure. The resultant calcination images of the specimens revealed characteristic existences of seemingly Ca oxalate crystals which have not been reported in the literature. Calcination images of flowers provide a means of identification of different plants and their classification.
V. N. Nekrassoff

(F)

123784f Note on the assessment of the purity of saffron color. Parvaneh, V. (Dep. Food Hyg., Tehran Univ., Tehran, Iran). *J. Ass. Pub. Anal.* **1972**, 10(2), 31–2 (Eng). Paper chromatog. and spectrophotometric methods were designed to det. the adulteration of saffron obtained from the stigma and styles of *Crocus sativus*, with the safflower coloring material obtained from the flower of *Carthamus tinctorius*.

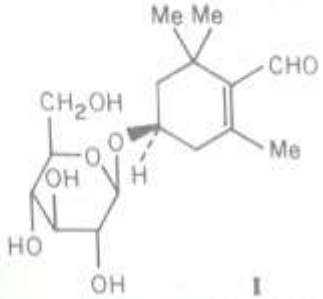
1973 (D)

soil material entering the stream ... studies on the saffron

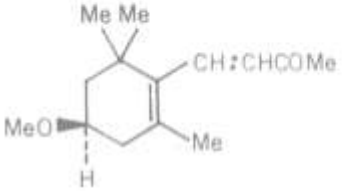
52240d Physiological and ecological studies on the saffron (Crocus sativus). V. Fertilizer experiment of the three essential nutrients. Kuribayashi, Tokiko; Sato, Shigeko; Ohashi, Hiromu (Fac. Pharm., Nagasaki Univ., Nagasaki, Japan). *Shoyakugaku Zasshi* **1972**, 26(2), 137–40 (Japan). N, P, and K had no significant effect on the yield of pistils per saffron corm. However, the α-crocin content of the pistils was highest in plants receiving P–K or grown without any fertilizer application.
M. J. Kuo

(D)

79122d Absolute configuration of picrocrocin. Buchecker, Richard; Eugster, Conrad H. (Org.-Chem. Inst., Univ. Zurich, Zurich, Switz.). *Helv. Chim. Acta* **1973**, 56(3), 1121–4 (Ger).



I



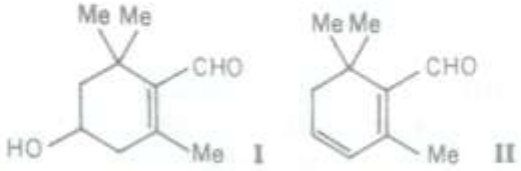
III

The title compd., obtained from saffron, had structure I with the *R* configuration at the aglycone O link. Hydrolysis of I with aq. phosphate buffer and an emulsion gave (−)-3-hydroxy-β-cyclocitral, which was methylated with MeI and Ag_2O to give the 3-methoxy deriv. (II). Treatment of II with diglyme, NaH, and Et_2PCH_2CN gave the β-cyclocitrylidenacetonitrile deriv., which then reacted with MeMgI to yield (−)-3-methoxy-β-ionone (III), also obtainable from xanthophyll di-Me ether.

(Q)

EtOH. The found R_f values were tabulated. P. T. Frangopol

45885q Saffron in the modern pharmacy. Identification and purity analyses. Duquenois, Pierre (U.E.R. Sci. Pharm., Strasbourg, Fr.). *Bull. Soc. Pharm. Strasbourg* 1972, 15(2), 149–59 (Fr). The principal biochemically important, constit-



uents of saffron (*Crocus sativus*) are separable and identifiable and yield 2 fractions (according to soly.): crocine and picrocrocine. The least sol. part, crocine is the colored fraction and is composed of mainly gentiobiose and crocetine along with other carotenoids (β and γ carotenes, lycopene, zeaxanthine). The more sol. portion, picrocrocine is the odoriferous fraction and is split into *d*-glucose and oxysaffronol (I) with emulsin or by acid into saffronol (II). Saffron is identified by morphology, organoleptically, by microscopy, and by ascending paper chromatog. using 4:1:5 BuOH–AcOH–H_2O. Purity anal. in most pharmacopeias is based upon rapid, semiquant. evaluation of 95% alc. exts. by paper chromatog. and by spectrometric evaluation of the color constituents present after hot aq. ext. (crocine fraction) at 440 nm. V. S. Venturella

1974

None

1975 (T)

5060t Minor carotenoid glycosides from Saffron (Crocus sativus). Dhingra, V. K.; Seshadri, T. R.; Mukerjee, S. K. (Dep. Chem., Univ. Delhi, Delhi, India). *Indian J. Chem.* **1975**, 13(4), 339–41 (Eng). In the course of the extn. of saffron for isolating α-crocin, now named crocin-1, 3 other components in substantial quantities have been isolated and their constitution established. They are: crocin-2(β-monogentiobioside-β-D-monoglucoside ester of α-crocetin); crocin-3(β-monogentiobioside ester of α-crocetin); and crocin-4(β-D-monoglucoside ester of monomethyl α-crocetin). They could be considered as intermediate stages in the evolution of α-crocin (crocin-1) which has 4 glucose units (I).

(Q)

197817q **Pharmaceutical preparation for preventing premature ejaculation.** Pourkian, Dariush **Ger. Offen. 2,405,115** (Cl. A61K), 14 Aug 1975, Appl. P 24 05 115.8-41, 02 Feb 1974; 4 pp. Prepns. which prevented premature ejaculation 4–5 hr after oral administration contained $FeCl_3$ **[7705-08-0]** (12–20), *iron citrate* **[17217-76-4]** (12–20), opium (12–20), *strychnine* **[57-24-9]** (0.12–0.02), *quinine* **[130-95-0]** (0.12–0.02), ground mussel shells or fine mussel pearls (12–20), and saffron (12–20%). An av. daily dose of the prepn. was 150–200 mg of the mixt. of active ingredients. Individual tablets contg. 33.333 mg each of $FeCl_3$, iron citrate, opium, small mussel pearls, and saffron, and 0.033 mg each of quinine and strychnine, a total of 167.031 mg active ingredients, were prepd.

1976 (X)

84: Î49393x **Effects of spice extracts on hydrolases. No. 1. On trypsin.** Kato, Yasumasa (Ogawa and Co., Ltd., Osaka, Japan). *Koryo* **1975**, 113, 17–23 (Japan). Aq. exts. of clove, thyme, and allspice markedly increased, and cardamom, white pepper, and nutmeg moderately increased *trypsin* **[9002-07-7]** activity in buffer soln. Of 34 spices tested, none inhibited the enzyme.

1977 (M)

[9000-97-9], but only in [illegible].

86: 187823m **Analytical contribution to the evaluation of saffron commerce technology.** Amelotti, G.; Mannino, S. (Ist. Chim. Agrar., Univ. Milano, Milan, Italy). *Riv. Soc. Ital. Sci. Aliment.* **1977**, 6(1), 17–20 (Ital). The coloring power of saffron samples from different countries, aging degrees, and processing was detd. by photometry. The water content has a very great effect on the coloring power and on the final color of saffron as objectively evaluated by tristimulus colorimetry.

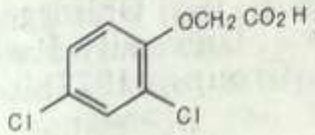
1978

None

1979 (Y)

uncoupled *ATPase* [9000-83-3] ... peas than in barley.

90: 67594y **Effect of 2, 4-dichlorophenoxy acetic acid (2, 4-D) on development and corm formation in Crocus sativus Linn.** Kabdal, P. B.; Joshi, P. (Omalgamated Units, Cent. Counc. Res. Indian Med. Homoeopathy, Tarikhet, India). *Indian J. Pharm. Sci.* **1978,** 40(5), 165–6 (Eng). *C. sativus*



I

corms were submerged in aq. solns. of *2,4-D* (I) [94-75-7] (10–200 ppm) overnight. Only concns. of 20 and 50 ppm I increased the leaf no., height of plants, and the no. of daughter corms in pot culture of the dipped corms.

1980

None

1981 (Q)

94: 214439q **Some historical considerations on the medicinal properties of saffron, in relation to its active principles.** Consorti, Augusta (Ist. Merceol., Univ. Pescara, Pescara, Italy). *Riv. Merceol.* **1980,** 19(4), 335–50 (Ital). A review, with 50 refs., of the pharmaceutical and pharmacol. aspects of saffron, as well as its uses in antiquity.

(E)

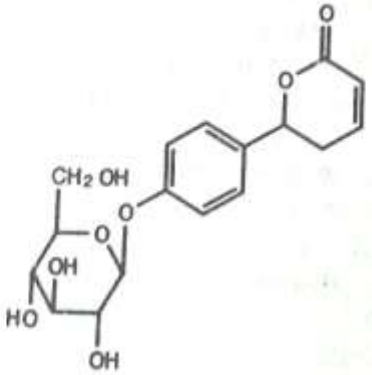
newly formed organs depends on these [illegible]

94: 44167e **Formation of cytoplasmic and nuclear proteins in saffron (Crocus sativus L.) during flower formation.** Ebrahimzadeh, Hassan; Fotowati, Azar (Res. Inst. Biochem. Biophys., Univ. Teheran, Teheran, Iran). *Physiol. Veg.* 1980, 18(3), 411–17 (Fr). Cytoplasmic protein concn. decreased greatly in corms and buds of saffron (*C. sativus*) during flowering. This diminution was more drastic in corms than buds. At flowering the ratio of histone proteins to DNA increased in corms as well as in buds, whereas the ratio of nonhistone proteins to DNA decreased in the corms but increased in buds. In saffron the amt. of cytoplasmic proteins and the change in the ratio of histone or nonhistone proteins to DNA may be related to

1982 (W)

97: 141782w **Biosynthesis of C_{20}-carotenoids in Crocus sativus.** Pfander, Hanspeter; Schurtenberger, Heidi (Inst. Org. Chem., Univ. Berne, CH-3012 Berne, Switz.). *Phytochemistry* 1982, 21(5), 1039–42 (Eng). Phytoene, phytofluene, tetrahydrolycopene, β-carotene, zeaxanthin, and crocetin were isolated from *C. sativus*. The absence of C_{20}-hydrocarbon precursors of crocetin supports a degrdn. path for the biosynthesis of crocetin.

97: 141783x **Biosynthesis of psilotin from [2',3'-$^{13}C_2$,1'-^{14}C,4-^{3}H]phenylalanine studied with carbon-13 NMR.** Leete, Edward; Muir, Alister; Towers, G. H. Neil (Nat. Prod. Lab., Univ. Minnesota, Minneapolis, MI 55455 USA). *Tetrahedron Lett.* 1982, 23(26), 2635–8 (Eng). The incorporation of labeled



I

phenylalanine into the 6-diphenyldihydro-α-pyrone moiety of psilotin (I) and its epoxide in *Psilotum nudum* occurred with retention of all the isotopes. The specific incorporation of the racemic phenylalanine was almost as high as that of the natural (*S*)-phenylalanine. Also, the high retention of ^{3}H relative to ^{14}C showed that the unnatural (*R*)-phenylalanine is used in the prepn. of I and its epoxide as efficiently as its L-isomer.

97: 141784y **The formation of**

(E)

97: 54180e **Chemical analysis of saffron.** Corradi, Cesare (Lab. Chim. Prov., 20129 Milan, Italy). *Boll. Chim. Unione Ital. Lab. Prov., Parte Sci.* **1981,** 32(S5), 271–95 (Ital). The ash content, bichromate, *crocin* **[42553–65–1],** and *safranal* **[116–26–7]** values, the $E_{257}^{0.1\%}$ and $E_{400}^{0.1\%}$ extinction values (Corradi, C. and Micheli, G., 1979) and the ΔE_{pic} values ($E_{257}^{0.1\%} - E_{297}^{0.1\%}$) are tabulated for 14 saffron samples. Six samples showed adulteration, based on the above values, and 3 samples were suspected of adulteration. The anal. methods, taken from the literature, are described.

1983 (D)

pattern of vicilin and legumin fo[illegible]

99: 85262d **Changes in gibberellin-like activity in corms of saffron plant (Crocus sativus L.) during dormancy and sprouting.** Farooq, S.; Kaul, K. K. (Dep. Bot., Univ. Kashmir, Srinagar, 190006 India). *Biochem. Physiol. Pflanz.* **1983,** 178(8), 685–9 (Eng). Changes in extractable gibberellin like activity were followed in corms of the saffron plant (*C. sativus*) during dormancy and sprouting. Exts. prepd. from dormant corms in May and June lacked gibberellin-like activity. Detectable though feeble activity appeared in July and increased thereafter reaching a max. in Sept. Although the activity decreased somewhat in Oct. and Nov. it spread over a wider zone on the TLC plates suggesting a change in the spectrum of active components. At each of the 7 stages, activity was present only in the free acidic fraction. No activity was found to be assocd. with the bound fraction. Preliminary characterization of gibberellin like compds. at 1 stage (in Sept.) suggest the presence of 5–6 gibberellins one of which corresponds to GA_3 and another to unresolved GA_4 and GA_7.