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DATA EVALUATION RECORD

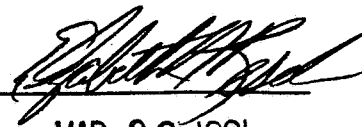
OPP PUBLIC DOCS

STUDY IDENTIFICATION:

✓ Huber, R. and S. Otto. September 1978. Uptake of Aged ^{14}C -Vinclozolin (BAS 352F- ^{14}C) Soil Residues by Rotational Crops; No. 1589. MRID# 00136385.

REVIEWED BY:

Elizabeth A. Resek, Chemist
Environmental Chemistry, Review Section 1
OPP/EFED/EFGWB

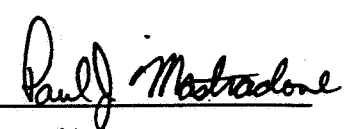
Signature 

Date

MAR 20 1991

APPROVED BY:

Paul Mastradone Ph.D., Chief
Environmental Chemistry, Review Section 1
OPP/EFED/EFGWB

Signature 

Date

MAR 20 1991

TYPE OF STUDY: Confined Rotational Crop

CONCLUSION:

EFGWB concludes that the study (previously accepted 3/25/80 and rotation intervals set; see DISCUSSION) does not satisfy present data requirements for confined rotational crop. The study is judged supplemental and cannot be made acceptable upon the submission and review of additional information. A new study is required. Soil residue analyses and storage stability data are required.

Based on the results of supplemental data, recovered ^{14}C for soybeans was 3.162 and 0.635 ppm for 60 and 365 day aged soils, respectively. For wheat, total ^{14}C recovered was 2.632 and 1.104 ppm for 60 and 365 day aged soils, respectively. Total ^{14}C in carrots for the 60 and 365 day aged soils was 23.533 and 1.859 ppm, respectively. Except for carrots, main levels of total ^{14}C were found in the roots.

MATERIALS AND METHODS:

Chemical ^{14}C -vinclozolin (specific activity 9.23 mCi/mMol) was used in the study. The soil used was a loamy sand with the following characteristics: 83% sand, 7% silt, 10% clay; pH 6.8; CEC 10 mVal/100g; bulk density 1.4 g/ml; and 2-6% OM. Prior to seeding of rotational crops, 5 kg portions of soil were aged for 60 and 365 days. During the aging periods, soil was maintained at 40%

maximum water capacity in the dark at 20 ± 2 C. After each respective aging period (60 and 365 days), black plastic pots (13 cm i.d., 10 cm high) were filled with 1 kg soil and appropriate crop seed (summer wheat, soybeans or carrots). The emerging plants were kept in a growth chamber at 20 ± 2 C with artificial light at 12-hour periods. Plants were watered and thinned as needed.

Thirty days after seeding and at harvest time (98-147 days) samples were removed and kept at what appears to be -20 C until analysis. the following plant parts were separated before analyses: soybeans (beans, pods, leaves, roots), wheat (grains, ears, stalks, roots), carrots (leaves, roots). At the 30 day interval only, above ground plant parts were sampled.

Radioactivity of solid and liquid extracts was determined by combustion and LSC quantitation of $^{14}\text{CO}_2$. Samples were extracted with methanol. Fractions were further partitioned using various liquid/liquid partitions to divide the extracts into various phases. Extracted and paritioned phases were analyzed by TLC using several solvent systems. HPLC was used to determine whether the absorbed residues included the intact dichloroaniline moiety.

REPORTED RESULTS:

Total radioacativity taken up by the rotational crops can be seen in column 7 of Table I. Recovered ^{14}C for soybeans was 3.162 and 0.635 ppm for 60 and 365 day aged soils, respectively. For wheat, total ^{14}C recovered was 2.632 and 1.104 ppm for 60 and 365 day aged soil, respectively. Total ^{14}C in carrots for the 60 and 365 day aged soil was 23.533 and 1.859 ppm, respectively. Except for carrots, main levels of total ^{14}C are found in the roots. The methanol extractable radioactivity (column 9) differed considerably depending on tissue investigated. TLC results (see attachments) show predominantly parent (BAS 352 F) detected. There is recovery of metabolite F (N-3,5-dichlorophenyl)-2,3,4-trihydroxy butanoic acid amide) in soybean leaves.

DISCUSSION:

EFGWB concludes that the study does not satisfy data requirements for confined rotational crop. The study cannot be made acceptable, and therefore, a new study is required. The registrant should note the following points:

1. Residues in soil should be analyzed at the time of treatment, at the time of planting the rotational crop, and at the time of harvest of the rotational crop.
2. Storage stability data are required.

3. Total ^{14}C recovery was reported using LSC, and it appeared from most TLC scans that residues recovered were in the form of parent vinclozolin. However, one scan showed metabolite F recovered, which was identified but not quantified. Residues should be characterized.
4. EFGWB previously accepted the present study (3/25/80) and along with an additional study (accepted 4/27/82) concluded that the confined rotational crop data requirement was fulfilled. Rotation intervals were established. Since the study is not acceptable under present Guidelines, the rotation intervals previously established are no longer valid. EFGWB recommends, however, that the intervals be used until a new study is submitted and judged acceptable by EFGWB.

Rotation Interval for Vinclozolin

Rotational crop data permits rotation only to the following and only when indicated total pounds active ingredient applied per acre have not been exceeded through the previous season:

1. Lettuce may be planted 6 months after treatment not exceeding 12 lb a.i./A.
2. Squash may be planted 2 months after treatment not exceeding 9 lb a.i./A.
3. Corn may be planted 2 months after treatment not exceeding 9 lb a.i./A with use of only the corn grain for food and /or feed purposes.
4. Spring wheat may be planted 9 months after treatments not exceeding 8 lb a.i./A.

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Table I: Presentation of results from uptake of aged ^{14}C -Vinclozolin
(BAS 352 F- ^{14}C) soil residues by rotational crops; (columns 1-17)

1	2	3	4	5	6	7	8	9
Sample designation	A ¹⁾	B ²⁾	Crop and Plant part	No. of plants	Weight (total) (g)	Total radio-act. ppm	Methanol extr. (ME) ppm	Meth. extr. in % of TR
1	60	30 ³⁾	Soybeans	7	14.59	3.162		
2	60	147	-beans	5	6.97	3.201		
3	60	147	-pods		9.23	0.851	0.350	41
4	60	147	-leaves		48.61	3.082	1.579	51
5	60	147	-roots		9.00	5.726		
6	365	30 ³⁾	Soybeans	2	2.88	0.635		
7	365	138	-beans	3	3.00	0.892		
8	365	138	-pods		7.92	0.508	0.165	32
9	365	138	-leaves		63.90	0.741	0.307	41
10	365	138	-roots		63.30	3.950	0.549	14
11	60	30 ³⁾	Wheat	13	11.15	2.632		
12	60	98	-grain	8	2.74	0.945		
13	60	98	-ears		1.28	1.818		
14	60	98	-stalks		5.13	7.567	3.340	
15	60	98	-roots		0.69	34.198		
16	365	30 ³⁾	Wheat	8	6.76	1.104		
17	365	121	-grain	10	12.92	0.783		
18	365	121	-ears		4.46	0.846		
19	365	121	-stalks		18.40	1.079	0.649	60
20	365	121	-roots		3.30	9.006		
21	60	30 ³⁾	Carrots	7	2.59	23.533 ⁵⁾		
22	60	98	-roots	20	148.84	0.886	0.334	38
23	60	98	-leaves		78.69	0.744	0.330	44
24	365	30 ³⁾	Carrots	6	3.33	1.859		
25	365	112	-roots	18	139.00	0.265	0.144	54
26	365	112	-leaves		39.56	0.671	0.221	

- 1) Soil which soil had been aged aerobically prior to seeding of rotational crops
2) Date which plant samples were taken. Highest values correspond to harvest time
3) Above ground part only
4) ppm values are calculated as Vinclozolin equivalents
5) Values could not be confirmed due to lack of material
6) 3,5-dichloroaniline by total method, expressed as Vinclozolin equivalents in ppm
7) TR = Total radioactivity
8) ME = Methanol extract

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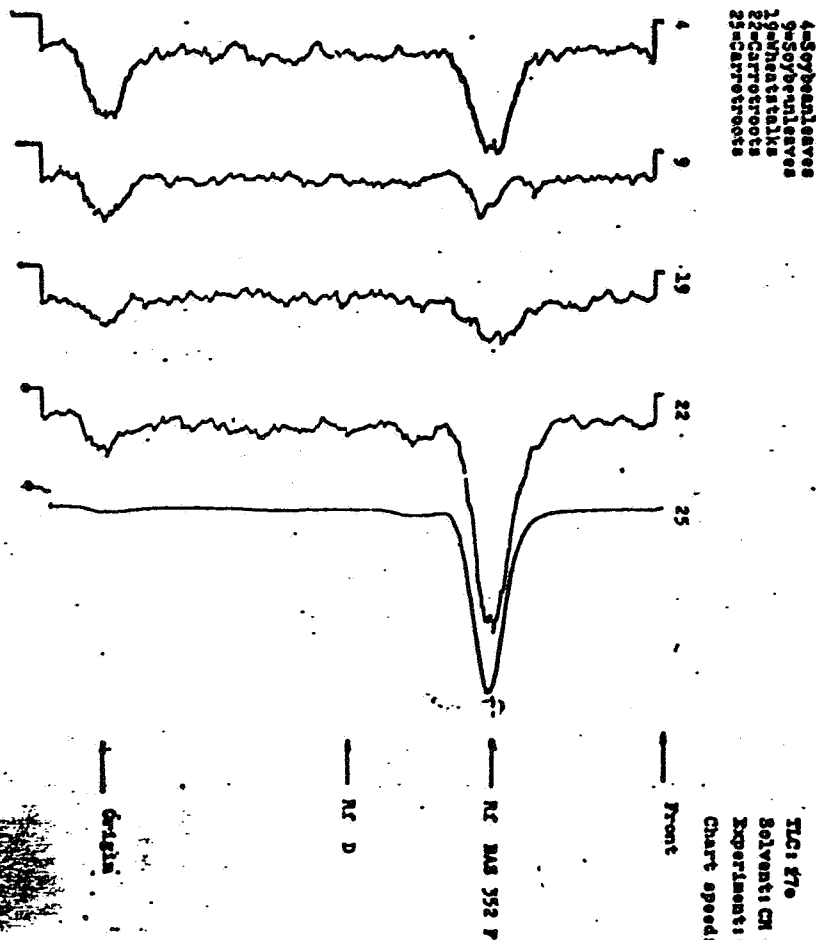
10 DCA ⁶⁾ by hydrolyses ppm	11 DCA in % of TR ⁷⁾	12 DCA via HPLC ppm	13 Hexane extract ppm	14 Ethylac. extract ppm	15 Sum. hexane + ethylacetate in % of EE ⁸⁾	16 Water- phase ppm	17 Waterphase in % of TR (ME)
3.164 3.395 0.630 2.681 11.32	74 87	2.34	0.015 0.080	0.243 0.864	73 60	0.097 0.482	11 (28) 16 (31)
0.419 0.751 0.254 0.492 2.180	66 84 50 66 55	0.39	0.016 0.021 0.113	0.109 0.150 0.269	76 56 70	0.052 0.123 0.131	10 (32) 17 (40) 3 (24)
1.606 0.111 1.426 3.971 8.396	61 12 78 52 25	5.945 ⁵⁾					
0.359 0.053 0.168 0.424 1.559	33 7 20 39 17	0.34	0.075	0.185	40	0.398	37 (61)
3.038 0.360 0.611	41 82	0.428	0.158 0.127	0.022 0.087	54 65	0.127 0.115	14 (38) 15 (35)
1.005 0.090 0.224	54 34 33	0.06	0.033 0.041	0.013 0.062	32 47	0.092 0.126	35 (64) 19 (37)

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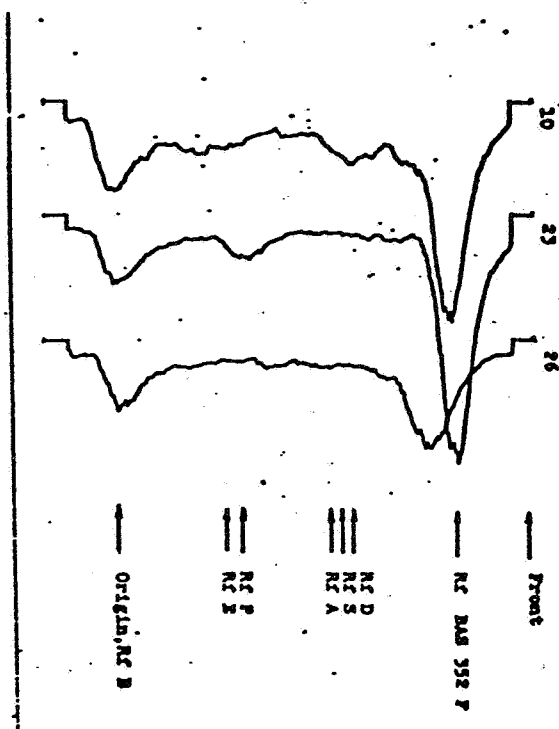
TLG: 870
Solvent: CH₂Cl₂
Instruments: CH-352, Ramanaphase
Chart speed: 500 mm/h

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22



10-80% hexane
25-26% Carboxylic acids

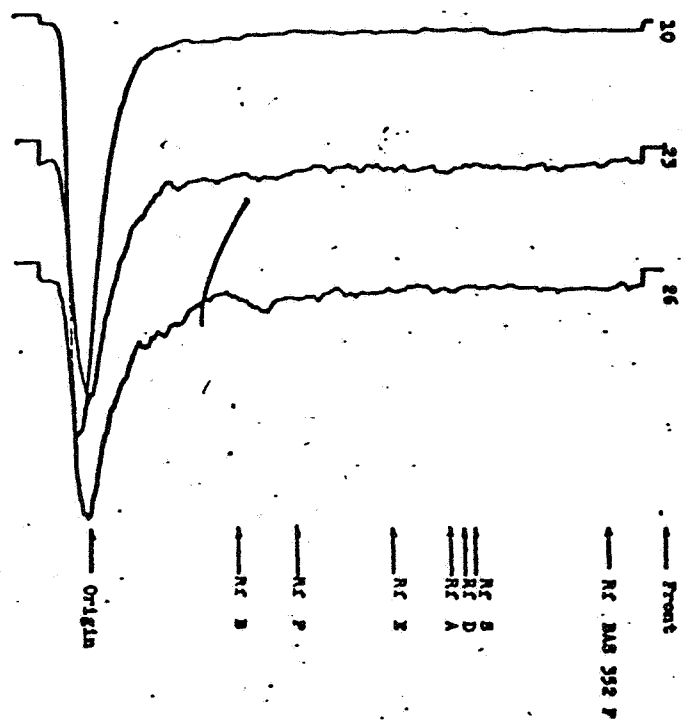
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Experiment: CR 358, Hexamaphase
Chart speed: 300mm/h

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ITC 907
Solvents CHCl₃/CH₃COOH 95/5
Experiments CR 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

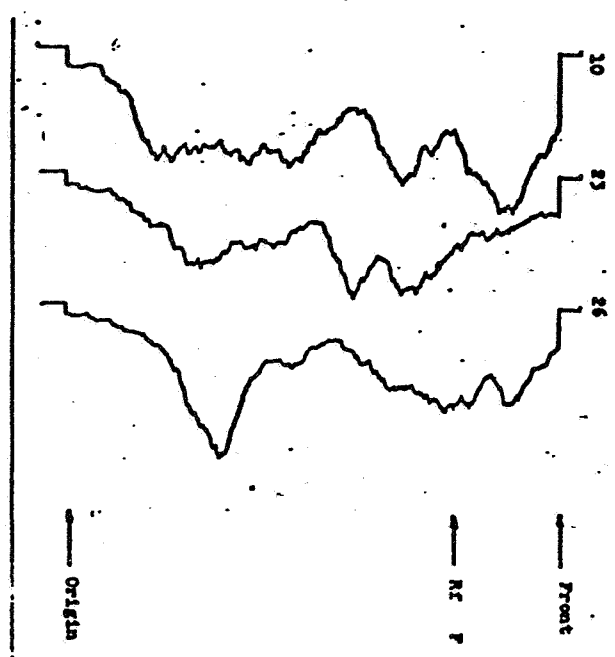
10- hydroxypropanoic
23-26- Carboxylate

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24



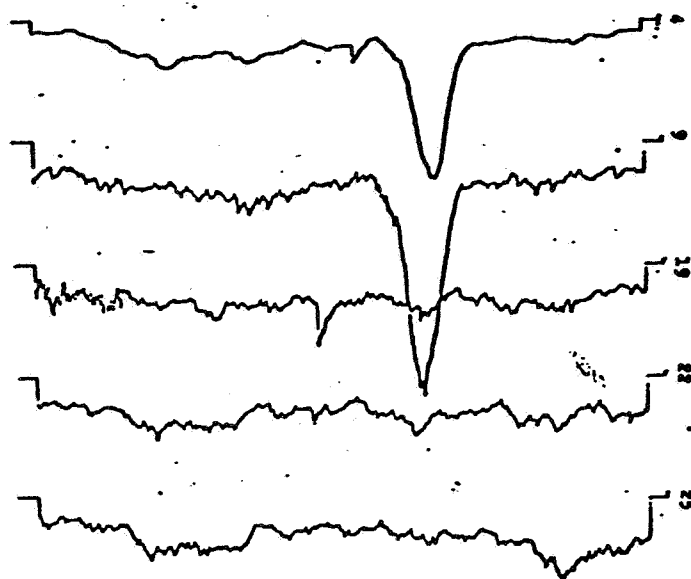
11/1/84
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Experiment: CM-358, Ethylacetate/1/1
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Phase

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25



4-8- Soybean leaves
9- Wheat straw
19- Carrot leaves
22- Carrot leaves
25- Carrot leaves

Origin

LC P

Flow

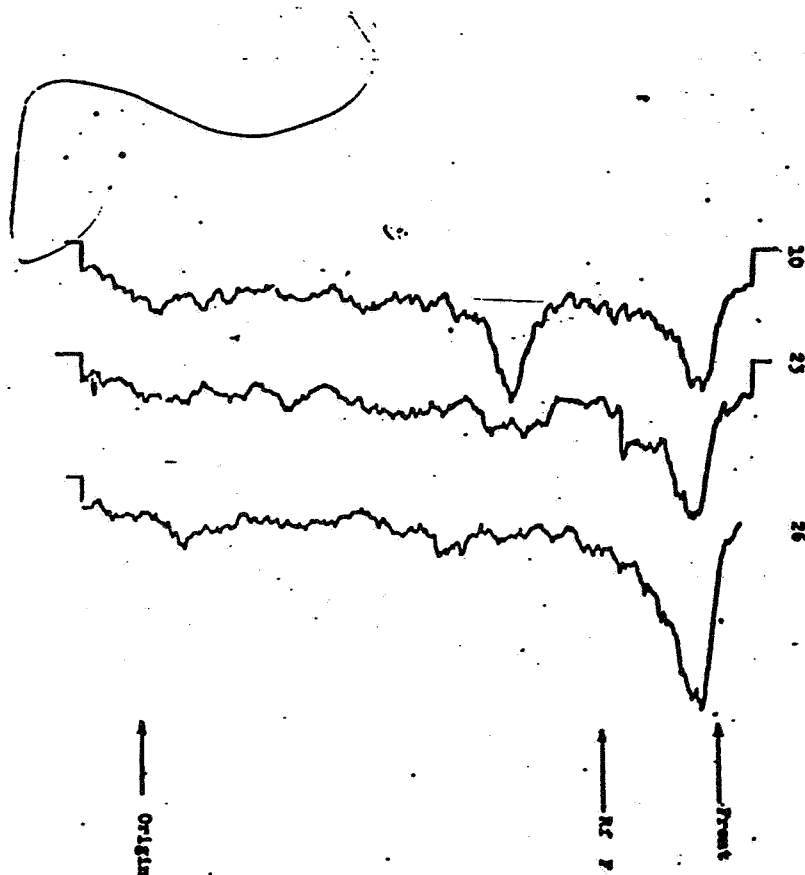
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Experiments: CN 352, Ethylacetate/H₂O
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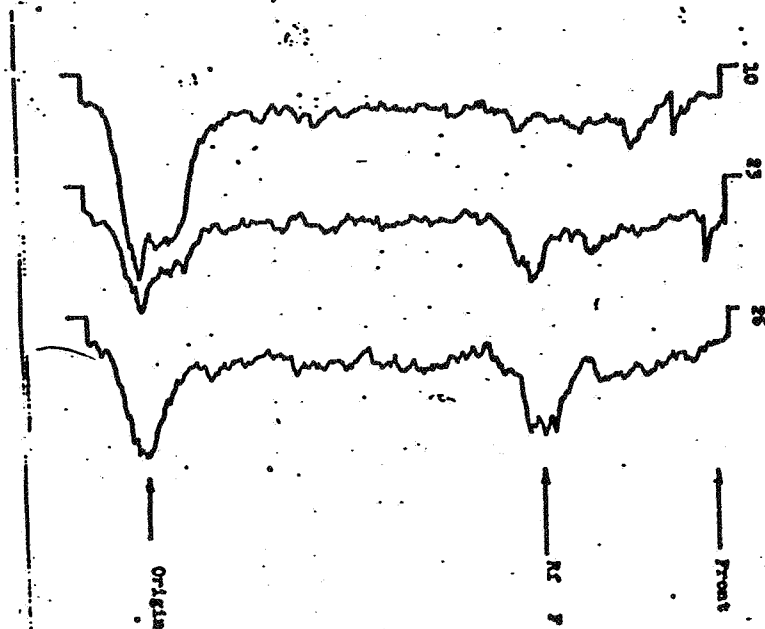
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TLC: 309
Solvent: Ethylacetate/CH₂COOH/H₂O
Experiment: after pre-treatment
with hexane and ethylacetate
Chart speed: 500 mm/h

242

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SLC 310
Solvent: CH₂Cl₂/CH₃COOH 99/5
Injection: after preextraction with
P-hexane and ethylacetate
Chart speed: 300 mm/s

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