Vaidya, V.G., N.N. Godbole and R.M. Kothari
University of Poona, India. Analysis of the excretory products of some species of Drosophila.

An attempt is made to study the excretory products of D. melanogaster, D. ananassae and D. repleta. Cultures of these species were individually grown under identical conditions in sterilized containers on the standard agar-cornmeal medium. The excreta of adult flies were carefully collected from the walls of the containers. It was dissolved in ice-cold glass-distilled water separately for each species without resorting to acid-, alkali- or heat-treatment as these may cause certain chemical and degradative changes. The solutions were individually spotted by capillary on Whatman No. 1 qualitative papers, which were then run in glacial acetic acid:n-butanol:water:1:4:5 phase for 4 hours at 27 degrees centigrade by circular chromatographic method after taking the usual precautions (Long et al., 1961). The chromatograms were then dried in air. A set of chromatograms, four for each species, was developed to test amino acid contents of excreta by spraying with 0.5% ninhydrin in acetone and dried at 70 degrees centigrade for 2 minutes. A second identical set was developed for testing the carbohydrate contents of excreta by spraying with 0.5% aniline phthalate in acetone and dried similarly. A third identical set was viewed in dark under 'chromatolite' having emission range 230-290 mu for UV positive spots, if any.

Qualitative tests for uric acid (Brown's reaction), glyoxylic acid (Fearon's test), urea (Sumner's urease test), ammonia (Kroupas's paper test) and creatinine (Kolisch's test) were performed (Welcher, 1966).

All the species showed invariably the presence of uric acid band as judged by the Rf value (0.32) and by Brown's qualitative colour reaction (Brown, 1945). Characteristic absorption maxima at 292 mu also confirmed the presence of uric acid in the excreta of all the three species. Test for glyoxylic acid was positive while those for urea, ammonia and creatinine were negative.

D. ananassae shows an additional UV positive spot on the chromatogram, which from Rf value calculations (0.18) appears to correspond to either adenylic acid or uridylic acid. However, the presence of these components is not yet confirmed by other qualitative tests. Further studies are in progress.

References: Brown, H., 1945, The determination of uric acid in human blood. J. Biol. Chem. 158: 601-608. Long, C., King, E.J. and Sperry, W.M., 1961, Biochemist's Handbook, E. & F.N. Spon Ltd., London. Welcher, F., 1966, Chemical Solutions, D. Van Nostrand Co. Inc. New York.

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Both lines showed a bimodal distribution of total activity on an arbitrary scale, but the distributions were radically different (χ^2 = 64, 8 d.f., $P \ll 0.0001$) between the lines. ORI had more individuals at the extremes of activity, ORIW had more with intermediate activities.

A leg rubbing operation where one middle leg was used in conjunction with the contralateral foreleg to rub the other foreleg, designated "three legged front", was observed. A "circling and backing" motion was also noted to have a different frequency in the two lines. "Wing combing" during the observation period also appeared to differ between the lines. The table shows the relationship:

Line	Expression	Wing combing	Circling & backing	Three legged front
ORI	+	151	1	111
	-	49	199	89
ORIW	+	131	12	83
	-	69	188	117
	χ^2	4.81	8.02	7.84
	P	0.03	0.0045	0.005

Of 13 behavioral patterns observed 3 appear to show differences that we may attribute to the substitution of w for w^+ in the homozygous Oregon-R background. In addition a general activity difference is apparent. The association of 4 of 14 measures with the single gene difference can be taken as an indication that such studies are likely to be worth continuing effort.