metabolites may be absorbed by the intestine and re-excreted in the bile. Whether this enterohepatic circulation of retinol derivatives has functional significance in the control of retinol catabolism is being explored. The major portion of the metabolites formed are polar and acidic, and most likely are hydroxylated derivatives of retinoic acid. Characterization of these compounds is in progress.

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RICHARD D. ZACHMAN
JAMES ALLEN OLSON

Department of Biochemistry,
University of Florida,
Gainesville.

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Carbonyl Compounds in Toasted Oat Flakes

THE nut-like flavour of properly toasted oat flakes is associated with volatile and non-volatile compounds developing mostly during the toasting process. The volatile compounds are represented primarily by carbonyl compounds. Their amount, and in some cases even the content, are much higher after processing. In the original oat flakes, only slightly steamed, we established the presence of the following compounds: furfural, formaldehyde, propanal, acetone and two unidentified carbonyl compounds. In toasted oats a certain decrease of formaldehyde was observed, but a number of other aldehydes and ketones appeared. In laboratory tests we found acetaldehyde, butanal, 2-methylpropanal, 2-methylbutanal (α-methylbutanal), 3-methylbutanal (β-methylbutanal), hexanal, octanal and 2-butanal.

Of the ketones present, 2-pentanone (methylpropylketone), 2-hexanone (methylbutylketone), 2-octanone (methylhexylketone) and diacetyl (2,3-butadione) were established with certainty. The carbonyl compounds were separated by paper chromatography and their identification carried out by transferring them to 2,4-dinitrophenylhydrazone.

Furfural being present in considerable quantities, but not exceeding other compounds in amount, cannot be assumed to be the main cause of the specific flavour of toasted oat flakes. It seems to contribute to the aroma in the same way as hydroxymethylfurfural. The two methylbutanals as well as butanal, hexanal and octanal and propanal show a characteristic flavour. We suppose that even the presence of methylketones, which themselves possess a clear-cut aroma, support the characteristic flavour of the oat-meal. The presence of a comparatively large amount of 2-hexanone confirms our assumption.

A thorough knowledge, not only of the number of components developing during the toasting process, but also their amount and their proportions may help us to foretell the flavour of toasted oat flakes.

The carbonyl compounds cannot be regarded as the sole source of flavour, since there is a number of other volatile amines, the presence of which has been recorded elsewhere.

Considering the problem of flavour we must also mention the developed non-volatile compounds, primarily the melanoidins and similar substances, which are doubtless also responsible for the unique flavour of oatmeal, according to earlier findings.

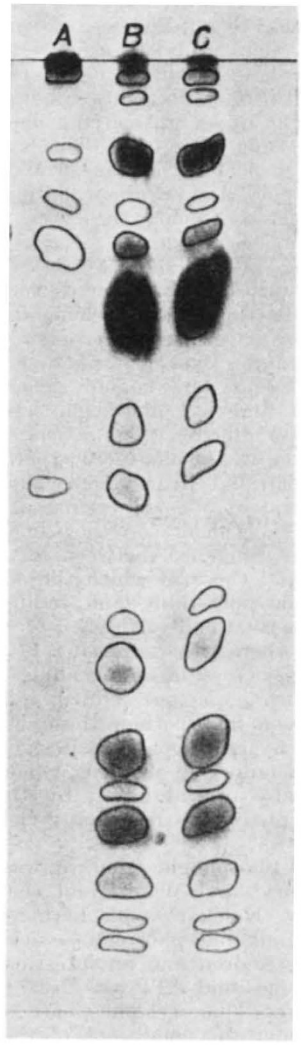

Fig. 1. Carbonyl compounds in toasted oat flakes. For the separation of mixtures of 2,4-dinitrophenylhydrazones, descending paper chromatography was used. Whatman paper No. 1 impregnated with 30 per cent *N,N'*-dimethylformamide in ether. Developing system hexane saturated with *N,N'*-dimethylformamide. After the detection by potassium hydroxide solution. *A*, Untoasted oat flakes. Spot from the start: 1, unidentified; 2, furfural; 3, formaldehyde; 4, unidentified; 5, acetone + propanal. *B*, Toasted oat flakes at a lower temperature and for a longer time. *C*, Toasted oat flakes at a higher temperature and for a shorter time. Spot from the start: 1, Unidentified; 2, hydroxymethylfurfural; 3, furfural; 4, formaldehyde; 5, diacetyl; 6, acetaldehyde; 7, 2-butanal; 8, acetone + propanal; 9, *n*-butanal; 10, 2-methylpropanal; 11, 3-methylbutanal; 12, 2-pentanone; 13, *n*-hexanal + 2-methylbutanal; 14, 2-hexanone; 15, *n*-octanal; 16, 2-octanone

JIŘÍ HRDLIČKA
GUSTAV JANÍČEK

Department of Food Chemistry and Analysis,
Faculty of Food Technology,
Institute of Chemical Technology,
Prague.

Cation-fluxes in Galactosæmic Erythrocytes

WITH the proved cation-permeability of erythrocytes, the constancy of sodium and potassium concentrations in plasma and red blood cells is maintained by an equilibrium between the electro-osmotic forces and the active transport. The main source of the required energy is glucose. In normal individuals galactose can be utilized for that purpose by a series of enzymatic processes converting galactose to glucose, the main pathway being that of