tent of pyruvic acid in proportion to acetaldehyde is increased when compared to yeasts with a high decarboxylase activity.

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Formation of Organic Acids from Ethanol by Rat Liver Slices

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Acetic acid is considered to be the main product of ethanol oxidation in the liver. Forsander and Räihä [1] found that beside acetic acid, acetoacetic acid, β-hydroxybutyric acid and an unknown acid were formed in the liver by perfusion experiments. Lundsgaard [2] and Lundqvist *et al.* [3], however, have not been able to find an increased formation of ketone bodies in experiments with perfused rabbit liver nor *in vivo* with human subjects during ethanol oxidation.

In the present study, the organic acids, originating from ethanol, have been quantitatively determined in experiments on liver slices. The liver slices were incubated for 60 min at 37.5°C in Ringer's solution containing 2.0 mg 1-^{14}C-ethanol and 2.0 mg glucose per ml medium. As gase phase 95 % O_2 and 5 % CO_2 were used. Livers of fed and fasted rats were studied. The preparation of the analysis and separation of the acids were performed as earlier described [1] except that the organic acids were extracted from the deproteinized medium by ether in an extraction apparatus. The specific activity of the acids, cpm per ml 0.005 N NaOH, was calculated from the counting and titration values of the fractions were the highest count was obtained.

In the experiments with fed and fasted livers, acetic acid was the main product of the partial ethanol oxidation (Table 1). In the fed liver a certain amount of β-hydroxybutyric acid was formed, in the fasted liver, however, this acid was formed in greater amounts. No acetoacetic acid was formed in these experiments, probably because the increased formation of DPNH [4] shifted the balance between the ketone bodies in favour for β-hydroxybutyric acid. In the fed liver, lactic acid was formed in big amounts but not in the fasted liver. In neither liver appreciable amounts of pyruvic acid were found. The unknown acid of the earlier experiments [1] seems to be an artefact due to a complex formation between β-hydroxybutyric acid and lactic acid.

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Table 1.

Acids	Fed liver			Fasted liver		
	0.005 N NaOH ml	c.p.m.	specific activity	0.005 N NaOH ml	c.p.m.	specific activity
Acetic acid	2.72	4961	1850	3.48	7067	2060
Pyruvic acid	—	28	—	0.10	120	—
β-Hydroxybutyric acid	0.87	871	333	2.15	1698	573
Lactic acid	2.60	45	—	0.62	—	—