rotation in pyridin; ELLIOTT et al. value[5] for quillaic acid was used for the aglycon.

Although there is no direct proof that the glucuronic acid is linked to the carbon 3 hydroxyl, it can be fairly well accepted on phytochemical grounds[13].

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Résumé. La prosapogenine obtenue de la quillaja saponine est le β-D-glucopyranuronoside de l'acide quillaïque.

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The Effect of Uncouplers of Oxidative Phosphorylation on Sodium Transport in the Proximal Renal Tubule of the Rat

The question of the source of energy for the postulated active transport and reabsorption of sodium from the proximal mammalian tubule has not been elucidated. In the toad bladder, frog skin[1] and even in the proximal tubule of Necturus[2], on the other hand, oxidative phosphorylation has been shown to play a significant role in the energetics of sodium transport. Experiments with inhibitors of oxidative phosphorylation 2,4-dinitrophenol and oligomycin in dogs[3–5] and rats[6] led to the conclusion that in the dog kidney the energy for sodium transport is not derived from ATP. This conclusion is contra-indicated by the finding of KATZ and EPSTEIN[7] on the direct relationship between Na-ATPase activity and sodium reabsorption in rat kidneys, and that of CHERTOK et al.[8] who observed a slight inhibition of proximal reabsorption after applying DNP into the renal tubule.

In the present work, we used in addition to DNP, the highly effective uncoupler of oxidative phosphorylation from the group of carbonyl cyanide phenyl hydrazones (their *p*-trifluoromethoxy derivative, FCCP) which, in a way similar to DNP, causes hydrolysis of intermediate products and oligomycin which interferes with the final phase of ATP synthesis.

The intrinsic reabsorptive capacity was measured in the proximal tubules of albino rats using the shrinking droplet technique as described by GERTZ[9]. All inhibitors were applied into the tubular lumen.

A concentration of $10^{-4}M$ DNP caused inhibition of reabsorptive capacity of the proximal tubule corresponding to the finding of CHERTOK et al.[8] both in acid and neutral solutions. The same inhibition was attained by administering $10^{-7}M$ FCCP while a concentration of $10^{-4}M$ FCCP induced 60% inhibition. The effect of oligomycin (2 γ/ml) was considerably increased after 4 applications to the same site in the tubule (so-called cummulative dosis). This might be related to its affinity for the protein structures of membranes[10].

These findings support the opinion that ATP might be the direct source of energy for sodium reabsorption in the proximal tubule of the kidney also in mammals. The negative results mentioned[3–6] obtained in experiments with the whole animal, might be related to the fact that inhibitors were applied via the blood. It was observed in experiments with isolated mitochondria that albumin added to the medium decreases the effect of DNP. Oligomycin is bound to the protein structures of membranes, and this may play a role when it passes through the system of membranes from the capillaries to the site of action inside the tubular cell when applied into the blood. A definite answer as to the role of ATP in proximal fluid absorption must wait for further experiments in which uncouplers of oxidative phosphorylation might also act from the interstitial side.

Zusammenfassung. Durch direkte intratubuläre Applikation von Entkopplern und Antagonisten der ATP wird wahrscheinlich gemacht, dass ATP bei der aktiven Rückresorption von Na im proximalen Konvolut der Ratte eine entscheidende Rolle spielt.

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Control	2,4-Dinitrophenol ($10^{-4}M$)		Oligomycin (2 γ/ml)	
	pH 5.8	pH 7.3	Single[a] dosis	Cumulative[a] dosis
$t^1/_2$				
9.1 ± 1.37	11.9 ± 2.05	11.4 ± 2.13	11.3 ± 1.74	14.1 ± 1.92
Control	FCCP			
	$10^{-3}M$	$10^{-4}M$	$10^{-5}M$	$10^{-6}M$
$t^1/_2$				
8.7 ± 1.17	23.2 ± 2.61	17.3 ± 2.04	15.2 ± 2.31	13.1 ± 1.95

$t^1/_2$, Half-time of oil shrinkage; values presented as mean ± residual standard error. [a] See text.

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