N-acetylhexosamine (measured as *N*-acetylglucosamine) ratio of 1.0:0.5 and a uridine:hexosamine (measured as glucosamine) ratio of 1.0:1.0. The hexosamine was obtained in maximum yield after hydrolysis of the nucleotide in 4*N*-HCl for 15 min. at 100°; hydrolysis for longer times destroyed the sugar. On paper chromatograms the hexosamine behaved like the aminomannuronic acid (Perkins, 1963) from the cell-wall polysaccharide of *M. lysodeikticus*.

UDP-*N*-acetylaminomannuronic acid has been isolated recently by Rosenthal (1968). It is proposed, therefore, that deprivation of bivalent cations stimulates the accumulation of three cell-wall precursors in the cytoplasm of *M. lysodeikticus*. However, treatment of another coccus, *Staphylococcus aureus* H, with EDTA causes less than a twofold increase in its *N*-acetylhexosamine content.

It is noteworthy that abnormally high concentrations of UDP-*N*-acetylmuramyl-peptides can be induced by several different methods, but increased pools of UDP-*N*-acetylglucosamine have only been reported in *S. aureus* deprived of nitrogen (Ito & Saito, 1963), where only a transient accumulation occurred, and in *S. aureus* treated with 5-fluorouracil (Rogers & Perkins, 1960).

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Formation of an *S*-Glucuronide by a UDP-Glucuronyltransferase and its Hydrolysis by β -Glucuronidase

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Thiol compounds can be conjugated with glucuronic acid in animals (see Marsh, 1966; Smith & Williams, 1966). One of these *S*-glucuronides, (*NN* - diethylthiocarbamoyl 1 - thio - β - D - gluco - pyranosid)/uronic acid, occurs in mammals given Antabuse, tetraethylthiuram disulphide (Kaslander, 1963; Strömme, 1965).

The various types of *O*-glucuronides are biosynthesized by glucuronyl transfer from UDP-glucuronic acid to the aglycone (see Dutton, 1966). This communication demonstrates formation of diethylthiocarbamoyl *S*-glucuronide by the same route, and its hydrolysis by a β -glucuronidase preparation.

Diethylthiocarbamate was incubated in mouse liver homogenate with UDP-glucuronic acid. In a modification of Kaslander's (1963, 1966) procedure, the incubation mixtures were acidified and extracted with butanol, the extracts were evaporated and chromatographed, and the chromatograms were sprayed with iodine-sodium azide reagent (Chargaff, Levine & Green, 1948). Two spots appeared, with *R_F* values corresponding to those of diethylthiocarbamate and its *S*-glucuronide (Kaslander, 1963). On further chromatography, the latter spot behaved like authentic diethylthiocarbamoyl *S*-glucuronide put through the same procedure. By the modified Tollens' test (see Dutton, 1966), hexuronic acid was shown to be present in this spot. No spot or hexuronic acid appeared when UDP-glucuronic acid was added after incubation or was incubated without substrate.

When UDP-[¹⁴C]glucuronic acid was present during incubation, radioactivity coincided with this 'conjugate' spot. If the labelled 'conjugate' was incubated with preputial gland (Levy, McAllan & Marsh, 1958) β -glucuronidase, all radioactivity left the conjugate and appeared in the position of free glucuronic acid; if glucarolactone (Levy, 1952) was present with the β -glucuronidase, no release of radioactivity was observed. That the β -glucuronidase preparation hydrolysed *S*- β -glucuronides and that glucarolactone inhibited this hydrolysis was demonstrated with the authentic *S*-glucuronide; no information about the action of β -glucuronidase on *S*-glucuronides could be found in the literature.

The synthetic enzyme appears to be a UDP-glucuronyltransferase. No conjugate appeared when UDP-glucose, glucuronolactone or glucuronate replaced UDP-glucuronic acid during incubation. Some properties of this enzyme will be discussed.

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