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Gallium, indium and beryllium-8-hydroxyquinaldate are easily extracted with chloroform, and these complexes were completely extracted from the solution of following pH range;

Ga-complex : pH 3.9-5.0, In-complex : pH 5.5, Be-complex : pH 7.6-8.6.

Accordingly, the authors carried out a successive extraction of these metaloquinaldate complexes with chloroform at optimum extraction pH (*i. e.* Ga : 3.9, In : 5.5 and Be : 8.2) and by this method, 2-10 μg Ga, 25-100 μg In and 2-5 μg Be/50 ml are determined respectively.

The Use of Radioactive Element. (II)

Decomposition of 1,4-Dibenzoylthiosemicarbazide and 1,4-Dibenzoylsemicarbazide with Alkali

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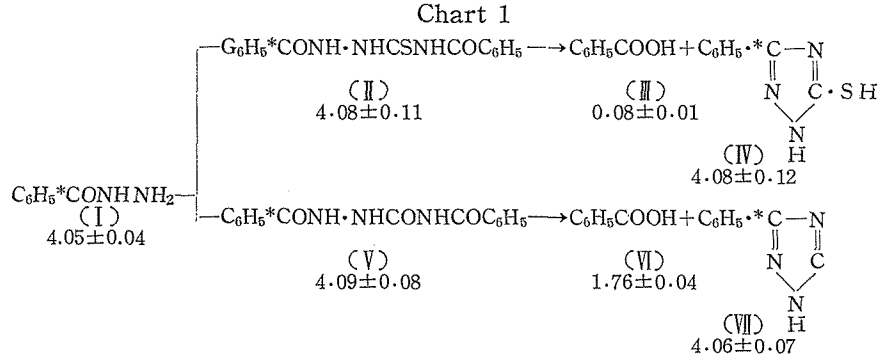
1,4-Dibenzoylthiosemicarbazide (II) or 1,4-dibenzoylsemicarbazide (V) is converted by the action of alkali into 3-phenyl-5-mercapto-1, 2, 4-triazole (IV) or 3-phenyl-5-hydroxy-1, 2, 4-triazole (VII), benzoic acid and ammonia. There are two possible routes in this reaction, since IV is prepared from both 1-benzoyl-thiosemicarbazide (A) and 4-benzoylthiosemicarbazide (B) and VII is prepared from both 1-benzoylsemicarbazide (A') and 4-benzoylsemicarbazide (B'). These monobenzoyl compounds are presumed as intermediate products of the reaction. The reaction routes were studied by using C^{14}-tracer technique. Labeled compounds II and V were synthesized from benzohydrazide [carbonyl-C^{14}] and were treated with 10%NaOH and 20%NaOH, respectively. The specific radioactivities (μc/m.mole) of the products measured at each step are shown under the formulae in Chart 1.

Chart 1



(1) The specific radioactivity of IV and VII is equal to that of II and V.

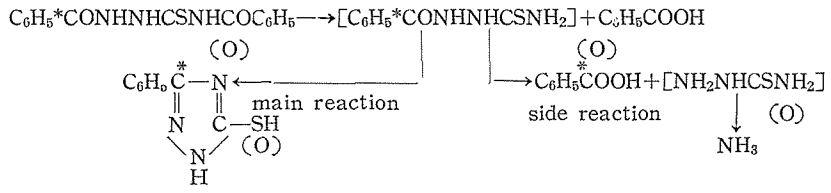
(2) When treated with alkali in the same manner as mentioned above, non-labeled specimens of A and A.' gave the triazole derivative, benzoic acid and ammonia.

(3) The amount of ammonia (2.3 % : 36%) was roughly proportional to the magnitude of specific radioactivity of benzoic acid (III) (0.08 μc/m.mole) and (VI) (1.76 μc/m. mole).

These results would lead to the following conclusion : In the action of alkali on 1,4-dibenzoylthiosemicarbazid [1-carbonyl-C^{14}] or 1,4-dibenzoylsemicarbazide [1-carbonyl-C^{14}], inactive benzoic acid and 1-benzoylthiosemicarbazide [carbonyl-C^{14}] or 1-benzoylsemicarbazide [carbonyl-C^{14}] and formed in the first step as a result of hydrolysis and the latter further cyclizes mainly to give 3-phenyl-5-mercapto-1, 2, 4-triazole [3-C^{14}] or 3-phenyl-5-hydroxy-1, 2, 4-triazole [3-C^{14}] with loss of water. Meanwhile, a part of the intermediate is hydrolysed to radioactive benzoic acid and thiosemicarbazide or semicarbazide, which affords ammonia by alkali with ease. Thus, specific radioactivity of the isolated benzoic acid, which is composed of inactive and active one, shows the magnitude of a side reaction.

The essential reaction routes of 1,4-dibenzoylthiosemicarbazide [1-carbonyl-C^{14}] and 1,4-dibenzoylsemicarbazide [1-carbonyl-C^{14}] with alkali are shown in Chart 2.

Chart 2.



Microbiological Studies of *Coli-aerogenes* Bacteria. (I)

Convertion of the Lactic Acid Fermentation to α-Ketoglutaric Acid Fermentation

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During investigations of the metabolisms of glucose by *coli-aerogenes* bacteria, it was found that the bacteria accumulated a large amount of α-ketoglutaric acid under aerobic conditions such as shaking culture, while lactic acid was ascertained to be produced anaerobically by the bacteria as was already known.