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Effect of Contact with Tissues In-Vitro on Activity of a Chicken Tumor Agent.

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The filtrate of Chicken Tumor No. 1 when kept in contact for 1 to 5 hours at room temperature with finely minced or dried muscle from susceptible fowl is generally either completely inactivated or has its potency greatly reduced. This partial or total inactivation was pronounced in 34 out of 46 tests. Carefully controlled experiments have shown that the 12 cases in which there was no demonstrable reduction in potency of the filtrate after muscle contact was explained by the fact that excessively active filtrates were used, for the inactivating effect of the muscle became evident when such filtrates were tested in more dilute form.

The specific nature of this reaction was shown by the fact that not only did muscle tissue of such resistant animals as the rabbit and pigeon have no effect on the activity of the tumor filtrate but the brain, kidney and liver of the susceptible chicken were without activity in this respect.

Desiccation of chicken muscle pulp after contact with filtrates has failed to release the tumor agent in an active form from the muscle. Either the union of the agent with the muscle substances is so strong as to render dissociation difficult or the phenomenon may be one of inactivation.

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The Availability of Nitrogen Compounds for the Streptococcus.

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This report deals with the effect upon growth and viability of streptococci, of the addition of various nitrogen compounds to synthetic media. Details of the technique involved have previously

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been described.[1, 2] The substances tested include inorganic nitrogen compounds, amino nitrogen compounds, benzene and imidazo derivatives and alkaloids.

We found that $(NH_4)_2HPO_4$ is more available for streptococcus than $(NH_4)_2CO_3$, NH_4NO_3 and $(NH_4)_2SO_4$. Previous investigators make no mention of such findings as applied to streptococcus metabolism. However, Dolt,[3] in his study of about 40 simple media for the growth of *B. coli* has chosen 2 as the best. One of these contains $(NH_4)_2HPO_4$ as the sole source of N. Fermi[4] shows that this ammonium salt is easily utilized by *B. prodigiosus* and *B. fitzianus*.

The relation of amino acids to the growth of streptococcus is not constant. For example, one series of experiments, in which amino acids were added to a basal mixture, showed glycocoll more beneficial than aspartic acid; in another series of experiments, the same amino acids were added to another basal mixture, aspartic acid was in the lead and glycocoll fell behind. Similar variable effects were obtained between aspartic acid and alanine and glycocoll and alanine. Tyrosine was always less available than glycocoll in these studies. The relation between tyrosine and aspartic acid was not so regular. It is evident that no definite conclusion can be drawn as to the comparative utilization of a certain group of compounds when a single basal mixture is investigated.

When amino acids were compared with other N compounds 2 tendencies were noticed. In some cases the former were utilized less rapidly than the latter. There were, however, comparatively few instances in which this was true. Thus, NH_4 lactate>leucine and tyrosine; uric acid>glycocoll>aspartic acid, glutamic acid and tyrosine, and NH_4 acetate = $(NH_4)_3$ citrate>aspartic acid. These several comparisons considered en masse simply mean that NH_4 lactate, uric acid, NH_4 acetate and $(NH_4)_3$ citrate supported the viability of the organism longer than the amino acids. It may be well to draw attention to the finding: Albumen>histidine>tryptophane>leucine and uric acid>glycocoll>aspartic acid, glutamic acid and tyrosine. Although albumen *per se* is not classed as an amino acid, amino acids are easily liberated from it. The writers feel that the result is due to the presence of some derived albumen substances in the autoclaved medium. Undoubtedly, amino acids were among

[1] Krasnow, F., Rivkin, H., and Rosenberg, M. L., PROC. SOC. EXP. BIOL. AND MED., 1925, xxiii, 215.

[2] Krasnow, F., Rivkin, H., and Rosenberg, M. L., *J. Bact.*, 1926, xii, 385.

[3] Dolt, M. W., *J. Infect. Dis.*, 1908, v, 616.

[4] Fermi, C., *Archiv. für Hygiene*, 1892, xiv, 1.

them. So that for the purpose at hand, albumen may be classed among the amino acids. There were then altogether 3 instances in which the 4 "non-amino acid" substances were better than amino acids. On the other hand most of the latter were better than most of the former. This was well illustrated. Alanine, glycocoll, leucine, tyrosine>NH_4 acetate, $(NH_4)_2CO_3$, $(NH_4)_3$ citrate, NH_4 lactate, NH_4NO_3, $(NH_4)_2$ oxalate, $(NH_4)_2HPO_4$, $(NH_4)_2$ tartrate, caffeine and urea; glycocoll, alanine, leucine, aspartic acid>NH_4 acetate, betaine and urea; histidine, tryptophane, leucine and glycocoll>NH_4 lactate and urea. The contrast is clear. In general, amino acids supply the streptococcus with N needs better than do other N compounds.

In this study, too, as was the case with carbon compounds,[5] there were instances of N addition causing no effect on the growth of the organism. This was true of $(NH_4)_2CO_3$, $(NH_4)_2HPO_4$, urea, aspartic acid, glutamic acid, tyrosine, uric acid and NH_4 lactate.

Tests on a series of 70 media containing N in imidazo, pyrole, pyridine, quinoline, azo, nitro-benzene and alkaloid linkages showed that streptococci can utilize the N from anthranilic acid, indigo and neosalvarsan.

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Studies on Anaphylaxis with the Products of Peptic Digestion of Proteins. II.

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In the experiments reported previously[1] material was used for the peptic digestion consisting mainly of egg albumin but also containing egg globulin. Since it was thought that possibly the latter was responsible for the effects observed, experiments were made with preparations of egg globulin. The results were in agreement with the former experiments in that the animals sensitized with the peptic digestion products were more sensitive to these than to unchanged globulin and vice versa. This result was especially pronounced in one batch of guinea pigs, the lethal intravenous dose for the animals sensitized with the digestion product being 1 cc.

[5] Krasnow, F., and Rosenberg, M. L., PROC. SOC. EXP. BIOL. AND MED., 1928, xxv, 295.

[1] Landsteiner, K., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiii, 540.