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Summary

Vobasine, a monomeric indole alkaloid of novel spectral type, and voacryptine, a monomeric 5-methoxyindole derivative, have been isolated from the bark of *Voacanga africana* Stapf.

'Active Ammonia'

In the course of our investigations on the possible active forms of ammonia, we studied the amination of α -keto acids by rat liver preparations. Liver from freshly sacrificed rats was washed with saline, minced and homogenized in saline with a Potter-Elvehjem type homogenizer. The incubation was carried out in 0.1 M pH 7.0 phosphate buffer. Each vessel received 20 μ mol. of sodium pyrophosphate and 5 μ mol. of malonic acid. The following additions were made at the level of twenty μ mol. of each: adenosine triphosphate (ATP), ammonium phosphate, α -keto glutaric acid (or pyruvic acid) and adenosine phosphoramidate (AMP-NH₂). The total volume was 3.2 ml. At the end of 2-3 h at 38°C trichloroacetic acid was added to a final concentration of 5%. The incubates were centrifuged and analyzed for amino acid by the ninhydrin method. The keto acid left was estimated by the method of FRIEDEMANN and HAUGEN¹. The results are presented in Table I.

Table I
Amino acid formation in rat liver homogenates

| No | Additions | Keto acid dis-appeared μ mol | Amino acid formed μ mol |
|----|---------------------------------------|----------------------------------|-----------------------------|
| 1 | None (tissue alone) . . . | None added | 3.90 |
| 2 | α -ketoglutaric acid (K.G.) | 0.0 | 5.10 |
| 3 | K.G plus ammonium phosphate | 0.0 | 11.85 |
| 4 | K.G plus ammonia plus ATP | 20.0 | 28.65 |
| 5 | K.G plus ATP | 17.82 | 23.65 |
| 6 | K.G plus AMP-NH ₂ . . . | 20.0 | 24.45 |

The results presented in Table II were obtained by elimination of each component from a complete medium consisting of liver homogenate, phosphate buffer, α -keto glutaric acid, pyrophosphate, malonic acid and adenosine phosphoramidate. Using pyruvic acid in the place of α -keto glutaric acid, similar results were obtained.

¹ T. E. FRIEDEMANN and G. E. HAUGEN, J. biol. Chem. 147, 415 (1943).

Table II
Relative importance of the components of the medium

| Medium of Incubation | Keto acid dis-appeared μ mol | Amino acid formed μ mol |
|--------------------------------------|----------------------------------|-----------------------------|
| Complete medium | 20.0 | 25.6 |
| Minus malonic acid | 19.67 | 32.7 |
| Minus pyrophosphate | 19.67 | 26.8 |
| Minus α -keto glutaric acid . | **** | 10.8 |
| Minus liver homogenate . . . | 0.0 | 0.0 |
| Minus AMP-NH ₂ | 10.35 | 13.4 |

These data show that adenosine phosphoramidate was as effective as a mixture of ATP and ammonia. ATP alone was quite active and this might be due to the endogenous formation of ammonia in the liver homogenate. Further experiments are in progress to test whether the role of AMP-NH₂ is confined to amino acid synthesis alone or is important in other amination (e.g. biosynthesis of glucosamine) and amidation (e.g. glutamine biosynthesis) reactions also. Further experimental details will be reported elsewhere. While these experiments were in progress, similar results were reported using preparations of *Mycobacterium*².

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Zusammenfassung

Es wurde gefunden, dass Adenosinophosphoramidat (Na) die Synthese von Keto-Säuren aus Rattenleberhomogenaten anregt. Diese Verbindung kommt in ihrer Wirkung einer Mischung von Adenosintriphosphat und Ammonium gleich. Wir beabsichtigen, die Amino- und die Amido-Reaktionen der Reinverbindungen zu untersuchen, um festzustellen, ob die physiologisch wirksame Form des Ammoniums aus Adenosinophosphoramidat besteht.

² N. KATUNUMA, Arch. Biochem. Biophys. 76, 547 (1958).

The Effect of Substance P on the Amount of 5-Hydroxytryptamine in the Gut

It has been shown in a previous work that substance P restored peristalsis when injected intraluminally into the isolated guinea-pig ileum in which the peristaltic reflex was abolished by fatigue, by external or internal application of 5-hydroxytryptamine, or by lowering the temperature of the bath¹. On the other hand, substance P when acting on the outside of the isolated guinea-pig ileum produced a block of the peristaltic reflex². 5-Hydroxytrypt-

¹ D. BELESLIN and V. VARAGIĆ, Brit. J. Pharmacol. 13, 321 (1958).

² D. BELESLIN and V. VARAGIĆ, J. Pharm. Pharmacol. 11, 99 (1959).