BLUMKIN, G. V.; KRITSKIY, YE. L.; LOKONOV, M. F.
NIKOLSKIY, N. K.; ROZHKOV, K. V.

" Some aspects of automation in ore concentration plants. "

paper to be presented at the Sixth International Mineral Processing Congress, Cannes, France, 26 May - Jun 63

KRITSKIY, Yevgeniy Lyudvigovich; MINSTER, Moisey Naumovich; BELOV, V.S., red.izd-va; BOLDYREVA, Z.A., tekhn. red.

[Preventing the penetration of metal prices into crushers] Zashchita drobilok ot popadaniia metallicheskikh predmetov. Moskva, Gosgortekhizdat, 1963. 130 p. (MIRA 16:5)
(Metal detectors) (Crushing machinery)

KRITSKIY, Ye.L.; MINSTER, M.N.

Automatic control of technological processes in foreign ore dressing plants (from foreign periodicals). Gor.zhur. no.2:72-73 F '63. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut mekhanicheskoy obrabotki poleznykh iskopayemykh, Leningrad.
(Ore dressing) (Automatic control)

BLUMKIN, G. V. (res sci); KRITSKIY, Ye. L. (res sci); LOKONOV, M. F.(lab hd); NIKOLSKIY, N. K. (res sci); ROZHKOV, K. V. (res sci)

"Some aspects of automation in ore concentration plants."

report submitted for 6th Intl Mineral Processing Cong, Cannes, 26 May-2 Jun 63.

Mekhanobr Inst, Leningrad.

KRITSKIY, Ye.L.; MINSTER, M.N.

Instruments and devices for controlling the level of hopper loads. TSement 29 no.4:4-5 Jl-Ag '63. (MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut mekhanicheskoy obrabotki poleznykh iskopayemykh.

KRITSKIY, Ye.L.; MINSTER, M.N.

Industrial television sets for mining, ore dressing and metallurgical industries. Stal' 23 no.10:956-957 O '63. (MIRA 16:11)

KRITSKIY, Ye.L.; MINSTER, M.N.

New metal detectors for ferromagnetic ores. Obog. rud. 8 no.2:27-31 '63. (MIRA 17:2)

KRITSKIY, Ye. L.; MINSTER, M. N.

New metal detectors for ferromagnetic ores. Obog. rud. 8 no. 2:27-31 '63. (MIRA 17:2)

AREF'YEV, B.A.; KRITSKIY, Ye.L.; PROTSUTO, V.S.

Extremal regulation of ore dressing machines according to the principle of occasional trial runs. Obog. rud. 8 no.3: 33-35 '63. (MIRA 17:1)

L 00009-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)
ACCESSION NR: AR5008444 UR/ 0271/65/000/002/A015/A016 48
62-505 B

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika. Svodnyy tom, Abs. 2A82

AUTHOR: Arof'yev, B. A.; Kritskiy, Ye. L.; Protsuto, V. S. 55

TITLE: Extremal controller operating on a single-dither principle

CITED SOURCE: Obogashcheniye rud, no. 1(49), 1964, 31-32

TOPIC TAGS: extremal controller, automatic control, automatic control system, automatic control design, automatic control theory

TRANSLATION: Two principal circuits are considered of an extremal controller which realize the control principle arising from a solution of the plant differential equations. A control system is constructed which migrates to the extremum according to $x_0 = \frac{\Delta_0 - \Delta_1 e^{\nu\tau} - N}{K}$. The system performs the following operations:

(1) turning on the actuator for a time τ and simultaneously measuring the control variable y_0; (2) reversing the actuator after time τ and measuring the control

Card 1/2

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ACCESSION NR: AR5008444

variable y_1 at the moment of reversal; (3) measuring the increment $\Delta_1 = y_1 - y_0$ over the period τ of the dither; (4) turning off the actuator after its return to the home position and measuring the control variable y_2 at the turn-off moment; (5) measuring the increment $\Delta_2 = y_2 - y_1$ over the time of the reverse movement of the actuator; (6) decreasing the increment by $\Delta_1 e^{-\tau/T}$ times; (7) subtraction, from the increment Δ_2, of two quantities: the product $\Delta_1 e^{-\tau/T}$ and the constant N. The result determines, with an accuracy of K coefficient, the required migration of the control element. A block diagram of a controller performing all the above functions is presented, and its operation is explained; also a principal diagram of the extremal-controller computer designed with electron tubes is given. Another controller intended to realize the same principle with standard components is also presented. Figs. 3, Bibl. 2.

SUB CODE: IE, DP ENCL: 00

Card 2/2

L 29232-66 EWT(m)/EWP(t)/ETI JD

ACC NR: AP6019339 SOURCE CODE: UR/0136/66/000/003/0020/0022

AUTHOR: Blyumkin, G. V.; Kritskiy, Ye. L.; Lokonov, M. F.; Protsuto, V. S.

ORG: none

TITLE: Questions on the use of computer technology at concentrating and agglomerating plants

SOURCE: Tsvetnyye metally, no. 3, 1966, 20-22

TOPIC TAGS: computer technology, automation

ABSTRACT: In connection with the absence of specialized data and computer machines for concentrating and agglomerating plants, the different systems of collection and processing current information, based on data and computer machines of general industrial use, are being proposed at the present time. The Central Planning and Design Office in its plans, is oriented to SOU and TsSTI systems for the Zyrayanov Concentrating Plant the VNIIEM-3 machine was selected; in the planning assignment for the automation of the production at the Zhianov Concentrating Plant use is provided for a newly developed electronic machine. Additionally the UMShN, MPPI, UM-1, MARS-UB and other machines and devices are recommended by various departments and individual organizations. [JPRS]

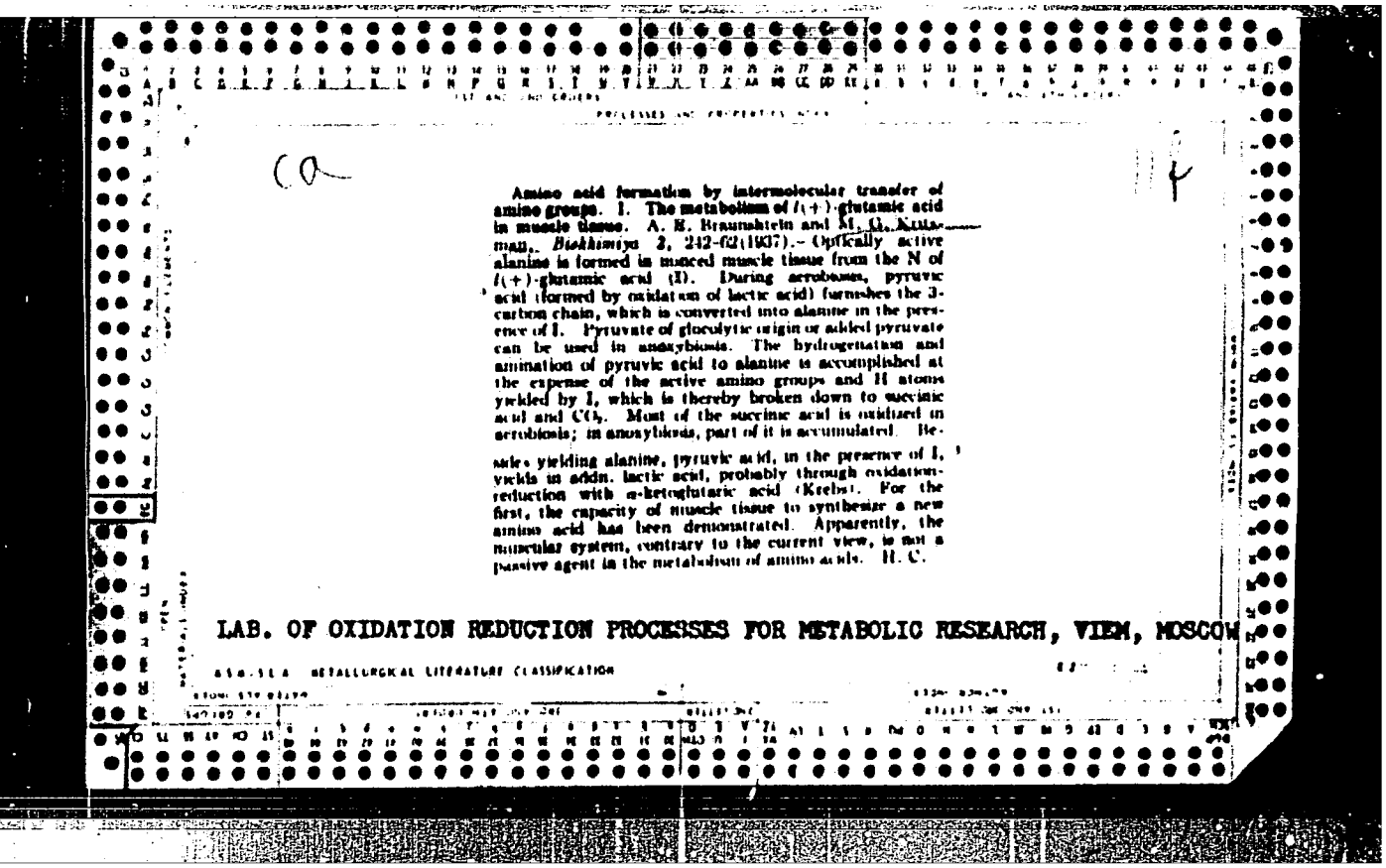
SUB CODE: 13, 09 / SUBM DATE: none / ORIG REF: 005 / OTH REF: 003

Card 1/1 UDC: 622.7.002.6

SAKHAROVA, L.N.; KRITSMAN, A.A.

Control of fungous diseases in Orgeyev District, Moldavian S.S.R. Zdravookhranenie 4 no. 1:48-49 Ja-F '61. (MIRA 14:2)

1. Iz bol'nitsy Orgeyevskogo rayona (glavnyy vrach - M.A. Bagmanyan).
(ORGEYEV DISTRICT--FUNGI, PATHOGENIC)

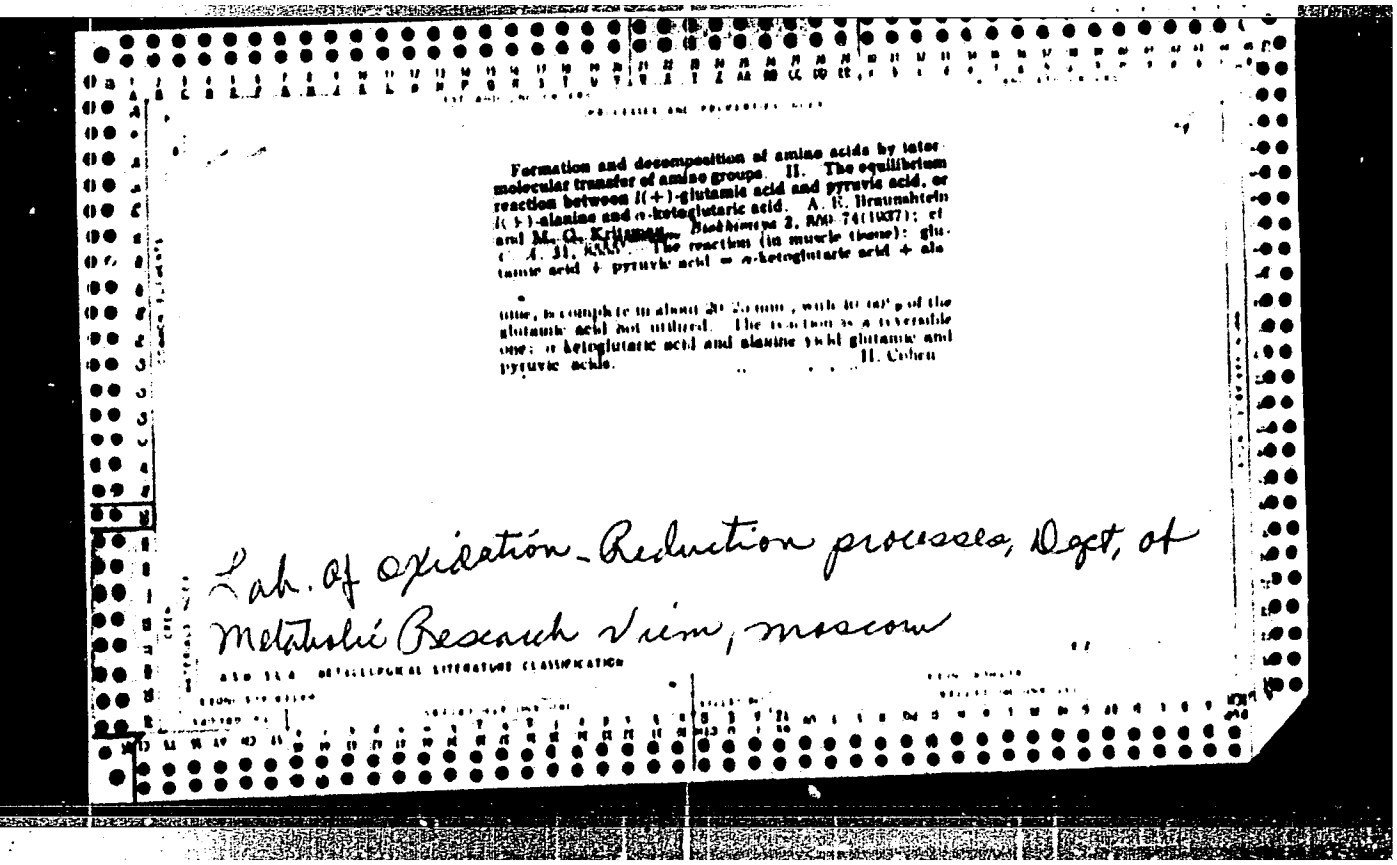


(CA

Amino acid formation by intermolecular transfer of amino groups. I. The metabolism of *l*(+)-glutamic acid in muscle tissue. A. E. Braunshtein and M. G. Kritzman. *Biokhimiya* 2, 242-62(1937).—Optically active alanine is formed in minced muscle tissue from the N of *l*(+)-glutamic acid (I). During aerobiosis, pyruvic acid (formed by oxidation of lactic acid) furnishes the 3-carbon chain, which is converted into alanine in the presence of I. Pyruvate of glycolytic origin or added pyruvate can be used in anaerobiosis. The hydrogenation and amination of pyruvic acid to alanine is accomplished at the expense of the active amino groups and H atoms yielded by I, which is thereby broken down to succinic acid and CO_2. Most of the succinic acid is oxidized in aerobiosis; in anaerobiosis, part of it is accumulated. Besides yielding alanine, pyruvic acid, in the presence of I, yields in addn. lactic acid, probably through oxidation-reduction with α-ketoglutaric acid (Krebs). For the first, the capacity of muscle tissue to synthesize a new amino acid has been demonstrated. Apparently, the muscular system, contrary to the current view, is not a passive agent in the metabolism of amino acids. H. C.

LAB. OF OXIDATION REDUCTION PROCESSES FOR METABOLIC RESEARCH, VIEM, MOSCOW

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Formation and decomposition of amino acids by intermolecular transfer of amino groups. II. The equilibrium reaction between l(+)-glutamic acid and pyruvic acid, or l(+)-alanine and α-ketoglutaric acid. A. E. Braunshtein and M. G. Kritzmann. Biokhimiya 2, 631-74(1937); cf. C. A. 31, 8355. The reaction (in muscle tissue): glutamic acid + pyruvic acid = α-ketoglutaric acid + alanine, is complete in about 30 minutes, with 40-50% of the glutamic acid not utilized. The reaction is a reversible one; α-ketoglutaric acid and alanine yield glutamic and pyruvic acids. H. Cohen

Lab. of Oxidation-Reduction processes, Dept. of Metabolic Research Inst., Moscow

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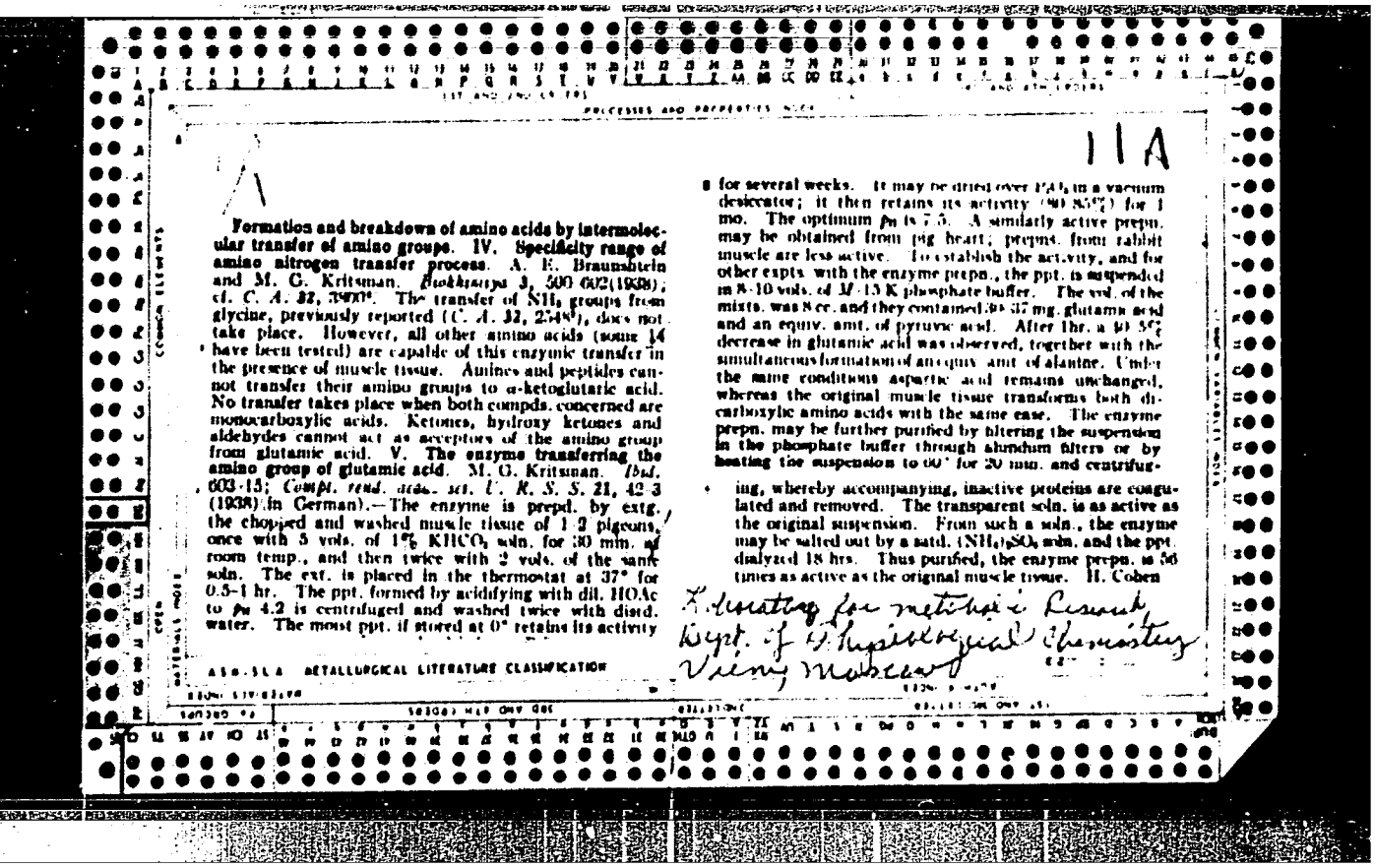
Formation and decomposition of amino-acids by the intermolecular transfer of amino-groups. III. Transformation of the glutamic acid in various tissues and organs. M. G. Kritzman (Biokhimiya, [illegible]).—Alanine is formed from glutamic acid and pyruvic acid in rabbit heart muscle pulp; in absence of pyruvic acid part of the glutamic acid disappears under aerobic conditions, without formation of alanine or disappearance of lactic acid. In brain glutamic acid yields glutamine aerobically in absence of pyruvic acid; in its presence alanine, but not glutamine, is formed. In liver and kidney pulp, in presence of O_2, glutamic acid gives glutamine and alanine when no pyruvic acid is added; in presence of pyruvic acid only alanine is formed. Transfer of NH_2 from glutamic to pyruvic acid is not activated by [illegible] or non-[illegible] erythrocytes, or their haemolysates. R. T.

LAB. of Oxidation-reduction processes, Dept. of Metabolic Research VIEM, Moscow

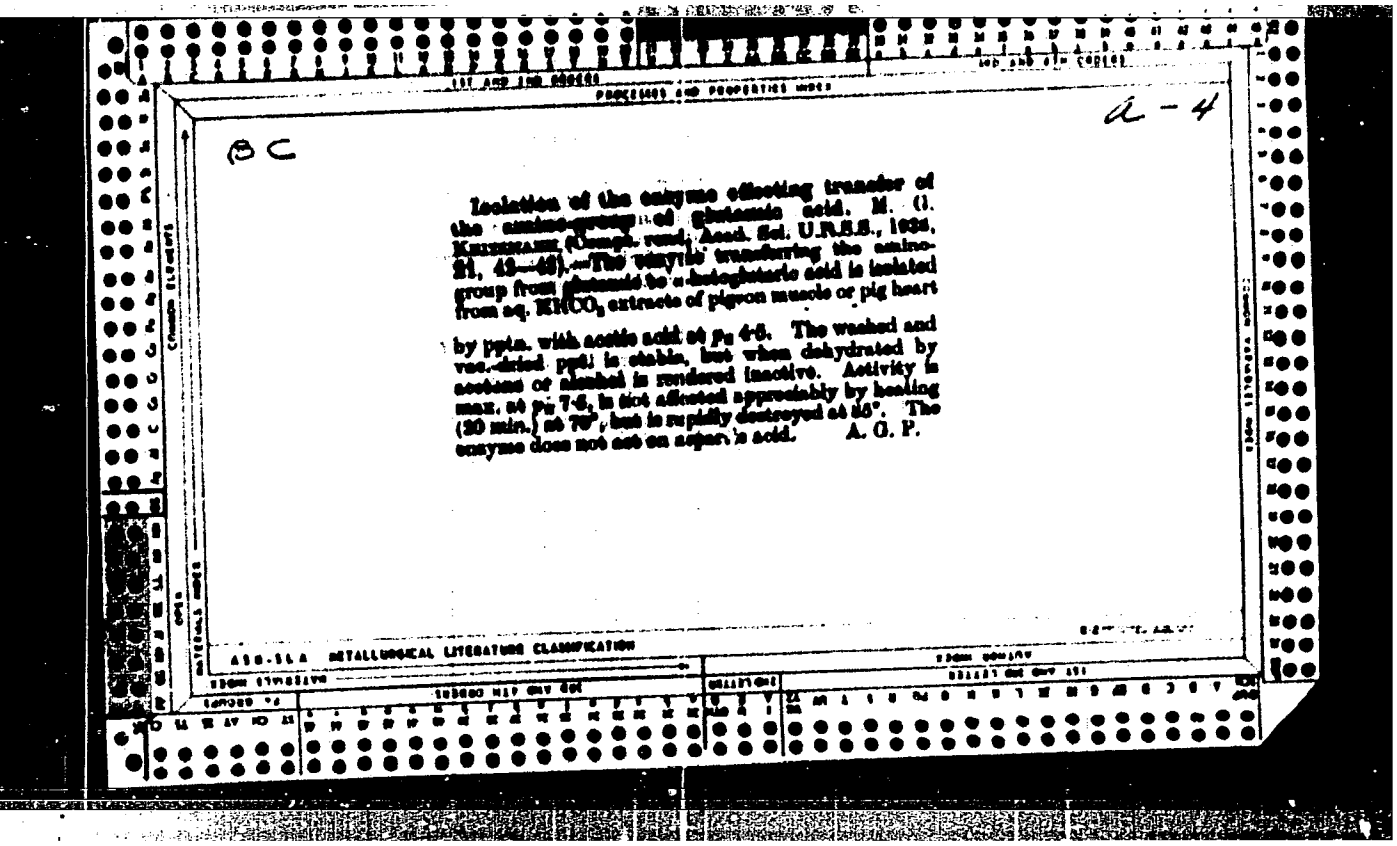
METALLURGICAL LITERATURE CLASSIFICATION



11A

Formation and breakdown of amino acids by intermolecular transfer of amino groups. IV. Specificity range of amino nitrogen transfer process. A. E. Braunshtein and M. G. Kritsman. *Biokhimiya* 3, 500-602(1938); cf. *C. A.* 32, 3909⁸. The transfer of NH_2 groups from glycine, previously reported (*C. A.* 32, 2748⁸), does not take place. However, all other amino acids (some 14 have been tested) are capable of this enzymic transfer in the presence of muscle tissue. Amines and peptides cannot transfer their amino groups to α-ketoglutaric acid. No transfer takes place when both compds. concerned are monocarboxylic acids. Ketones, hydroxy ketones and aldehydes cannot act as acceptors of the amino group from glutamic acid. V. **The enzyme transferring the amino group of glutamic acid.** M. G. Kritsman. *Ibid.* 603-15; *Compt. rend. acad. sci. U. R. S. S.* 21, 42-3 (1938) (in German).—The enzyme is prepd. by extg. the chopped and washed muscle tissue of 1-2 pigeons, once with 5 vols. of 1% $KHCO_3$ soln. for 30 min. at room temp., and then twice with 2 vols. of the same soln. The ext. is placed in the thermostat at 37° for 0.5-1 hr. The ppt. formed by acidifying with dil. HOAc to *p*H 4.2 is centrifuged and washed twice with distd. water. The moist ppt. if stored at 0° retains its activity for several weeks. It may be dried over P_2O_5 in a vacuum desiccator; it then retains its activity (80-85%) for 1 mo. The optimum *p*H is 7.5. A similarly active prepn. may be obtained from pig heart; prepns. from rabbit muscle are less active. To establish the activity, and for other expts. with the enzyme prepn., the ppt. is suspended in 8-10 vols. of *M*/15 K phosphate buffer. The vol. of the mixts. was 8 cc. and they contained 90-37 mg. glutamic acid and an equiv. amt. of pyruvic acid. After 1 hr. a 40-50% decrease in glutamic acid was observed, together with the simultaneous formation of an equiv. amt. of alanine. Under the same conditions aspartic acid remains unchanged, whereas the original muscle tissue transforms both dicarboxylic amino acids with the same ease. The enzyme prepn. may be further purified by filtering the suspension in the phosphate buffer through alundum filters or by heating the suspension to 60° for 20 min. and centrifuging, whereby accompanying, inactive proteins are coagulated and removed. The transparent soln. is as active as the original suspension. From such a soln., the enzyme may be salted out by a satd. $(NH_4)_2SO_4$ soln. and the ppt. dialyzed 18 hrs. Thus purified, the enzyme prepn. is 50 times as active as the original muscle tissue. H. Cohen

A S M-S L A METALLURGICAL LITERATURE CLASSIFICATION



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BC

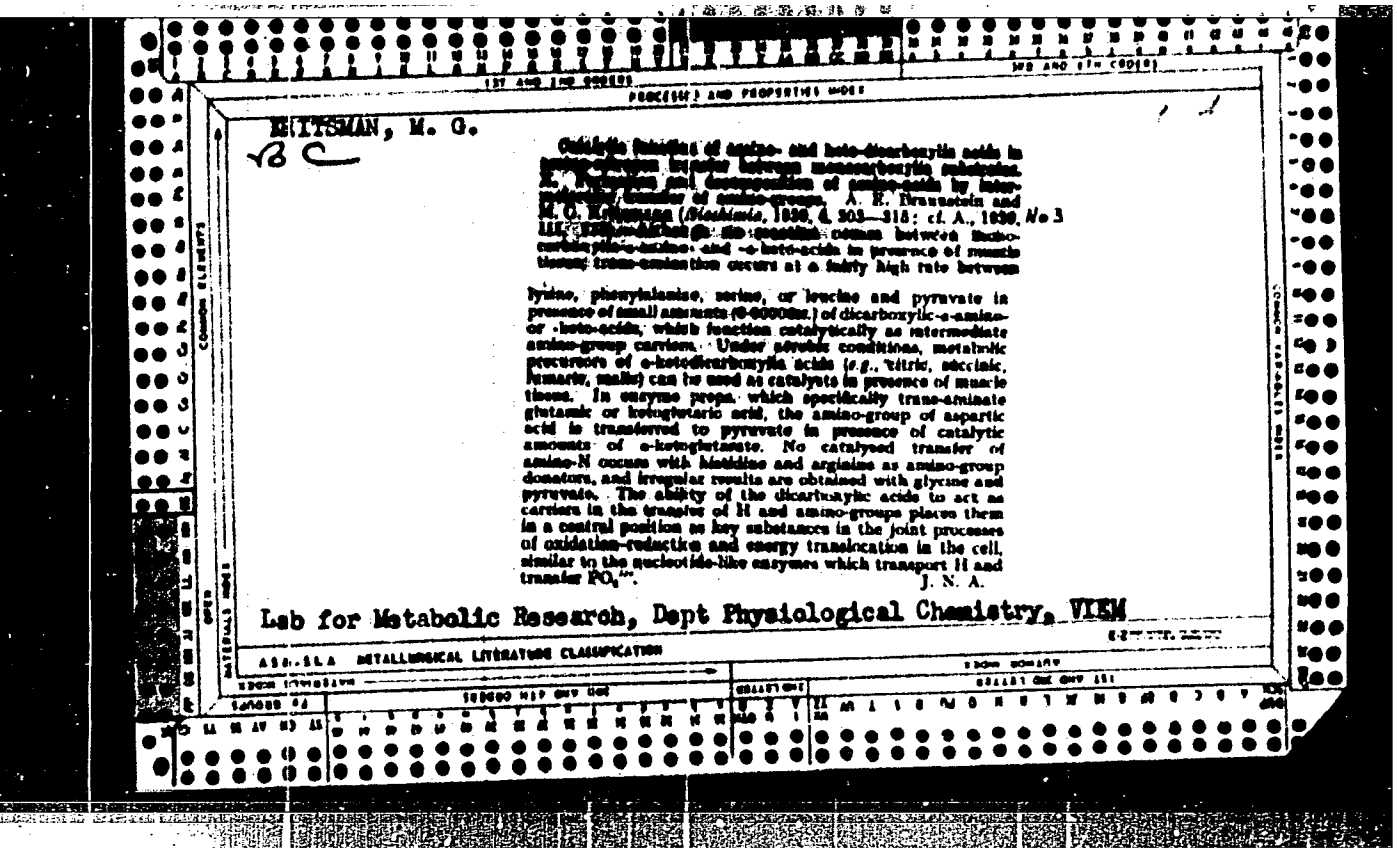
Isolation of the enzyme effecting transfer of the amino-group of glutamic acid. M. G. Kritzmann (Compt. rend. Acad. Sci. U.R.S.S., 1938, 21, 43—46).—The enzyme transferring the amino-group from glutamic to α-ketoglutaric acid is isolated from aq. NH_4CO_3 extracts of pigeon muscle or pig heart by pptn. with acetic acid at p_H 4·6. The washed and vac.-dried ppt. is stable, but when dehydrated by acetone or alcohol is rendered inactive. Activity is max. at p_H 7·6, is not affected appreciably by heating (20 min.) at 70°, but is rapidly destroyed at 80°. The enzyme does not act on aspartic acid. A. G. P.

A58-51A METALLURGICAL LITERATURE CLASSIFICATION

KRITSMAN, M. G.

"Amino Nitrogen Transfer in the Living Animal Body. VII. Communication on the Formation and Breakdown of Amino Acids by Intermolecular Transfer of Amino Groups," Biokhim., 4, No.2, 1939

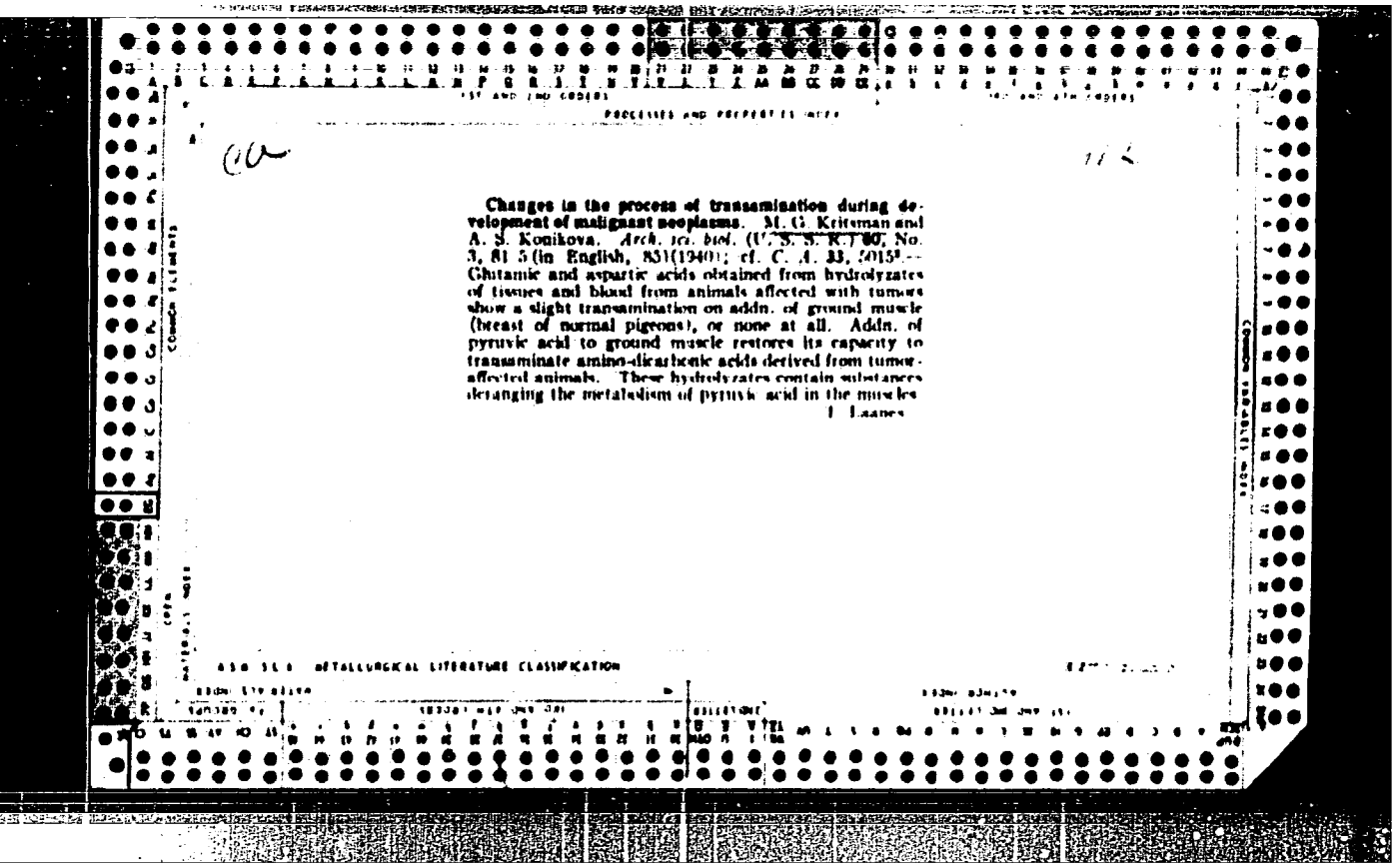
Lab. for Metabolic Research, VIEM, Moscow,



MITTSMAN, M. G.

Oxidative formation of amino- and keto-dicarboxylic acids in [illegible] tissues. [illegible] and decomposition of amino-acids by intermolecular transfer of amino-groups. A. E. Braunstein and M. G. Mittsman (*Biochimia*, 1938, 3, 303—318: cf. A., 1939, No 3 [illegible]). The reaction between dicarboxylic-α-amino- and -α-keto-acids in presence of muscle tissue; trans-amination occurs at a fairly high rate between lysine, phenylalanine, serine, or leucine and pyruvate in presence of small amounts (0·0000—) of dicarboxylic-α-amino- or -keto-acids, which function catalytically as intermediate amino-group carriers. Under aerobic conditions, metabolic precursors of α-ketodicarboxylic acids (*e.g.*, citric, succinic, fumaric, malic) can be used as catalysts in presence of muscle tissue. In enzyme preps. which specifically trans-aminate glutamic or hydroglutaric acid, the amino-group of aspartic acid is transferred to pyruvate in presence of catalytic amounts of α-ketoglutarate. No catalysed transfer of amino-N occurs with histidine and arginine as amino-group donators, and irregular results are obtained with glycine and pyruvate. The ability of the dicarboxylic acids to act as carriers in the transfer of H and amino-groups places them in a central position as key substances in the joint processes of oxidation-reduction and energy translocation in the cell, similar to the nucleotide-like enzymes which transport H and transfer $PO_4^{'''}$. J. N. A.

Lab for Metabolic Research, Dept Physiological Chemistry, VIEM



Changes in the process of transamination during development of malignant neoplasms. M. G. Kritsman and A. S. Konikova. *Arch. sci. biol.* (U. S. S. R.) 60, No. 3, 81-5 (in English, 85)(1940); cf. *C. A.* 33, 5015⁹.—Glutamic and aspartic acids obtained from hydrolyzates of tissues and blood from animals affected with tumors show a slight transamination on addn. of ground muscle (breast of normal pigeons), or none at all. Addn. of pyruvic acid to ground muscle restores its capacity to transaminate amino-dicarbonic acids derived from tumor-affected animals. These hydrolyzates contain substances deranging the metabolism of pyruvic acid in the muscles.
I. Isaacs

KRITSMAN, M.G.

Tramsamination and vitamin- B1 deficiency
XVI.Communication on the formation and breakdown of amino acids by intre-molecular trandfer of amino groups. M.G. KRITSMAN (LAB. FOR METABOLIC RESEARCH, DEPT, OF PHYSIOLOGICAL CHEMISTRY, VIEM, MOSCOW) Biokihniya 5, no.3, p. 281, 1940.

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PROCESSES AND PROPERTIES INDEX

[illegible] of mechanism of transamination by means of deuterium. A. [illegible] Konikova, M. G. Kritsman, and R. V. Teis (*Biokhimiya*, 1942, 7, [illegible]).—During transamination of α-deutero-dl-alanine with α-ketoglutaric acid in presence of glutamic-alanine [illegible] the water and the newly formed glutamic acid [illegible] practically no D. In absence of the enzyme [illegible] there is no removal of D from the alanine and in a control without [illegible] there is only insignificant exchange of D for H. It is concluded that there is no direct transference of α-H during transamination, but only through an intermediate removal and exchange for the H of the water.

J. N. A.

DEPT. OF PHYSIOLOGICAL CHEM. VIEM AND ;ABORATORY OF BIOGEOCHEMISTRY OF THE ACADEMY OF SCIENCES, USSR, MOSCOW

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KRITSMAN, M. G.

"The Use of Heavy Isotopes of Hydrogen and Nitrogen in Biochemistry" (p.27) by M.G. Kritsman and A.S. Konikova (Moscow)

SO: Advances in Modern Biology (Uspekhi Sovremennoi Biologii) Vol. XV, 1942, No. 1

KRITSMAN, M. G. Lab of Metabolic Research, Dept of Physiological Chem, VIEM

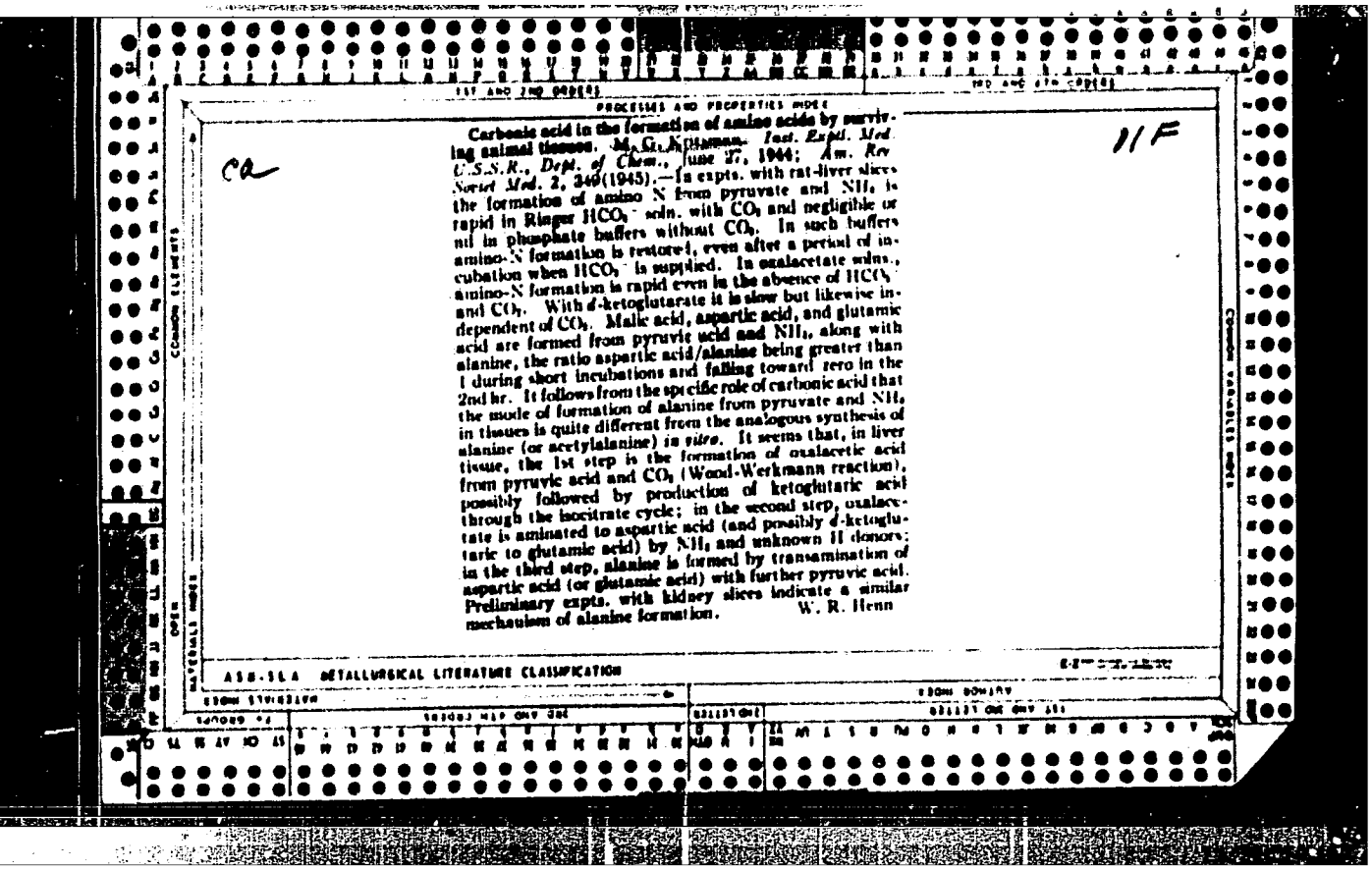
"Preparation and Partical Purification of the Coenzyme of Aspartic Aminopherase"

SOURCE: Biokhim, 8, No 1, 1943

KRITSMAN, M. G. Lab of Metabolic Research, VIEM, Moscow

"Metabolism of Aminoacids and B_1-Avitaminosis"

SOURCE: Biokhim, 8, No 1, 1943



PROCESSES AND PROPERTIES INDEX

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Carbonic acid in the formation of amino acids by surviving animal tissues. M. G. Kholmann. *Inst. Exptl. Med. U.S.S.R., Dept. of Chem., June 27, 1944; Am. Rev. Soviet Med.* 2, 349(1945).—In expts. with rat-liver slices the formation of amino N from pyruvate and NH_3 is rapid in Ringer HCO_3^- soln. with CO_2 and negligible or nil in phosphate buffers without CO_2. In such buffers amino-N formation is restored, even after a period of incubation when HCO_3^- is supplied. In oxalacetate solns., amino-N formation is rapid even in the absence of HCO_3^- and CO_2. With *d*-ketoglutarate it is slow but likewise independent of CO_2. Malic acid, aspartic acid, and glutamic acid are formed from pyruvic acid and NH_3, along with alanine, the ratio aspartic acid/alanine being greater than 1 during short incubations and falling toward zero in the 2nd hr. It follows from the specific role of carbonic acid that the mode of formation of alanine from pyruvate and NH_3 in tissues is quite different from the analogous synthesis of alanine (or acetylalanine) *in vitro*. It seems that, in liver tissue, the 1st step is the formation of oxalacetic acid from pyruvic acid and CO_2 (Wood-Werkmann reaction), possibly followed by production of ketoglutaric acid through the isocitrate cycle; in the second step, oxalacetate is aminated to aspartic acid (and possibly *d*-ketoglutaric to glutamic acid) by NH_3 and unknown H donors; in the third step, alanine is formed by transamination of aspartic acid (or glutamic acid) with further pyruvic acid. Preliminary expts. with kidney slices indicate a similar mechanism of alanine formation. W. R. Henn

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

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A-4

KRITSMAN, M. G.

Role of carbon dioxide in formation of amino-acids from pyruvate and ammonia. [illegible] (Biochimia, 1943, 8, 379— [illegible]). [illegible] of NH_3-N from pyruvate and [illegible] in CO_2 but negligible in PO_4'' [illegible] from [illegible] or [illegible] buffer [illegible] in the presence of CO_2. Malic, aspartic, glutamic [illegible] together with alanine from pyruvic acid and NH_3; the ratio of aspartic acid to alanine falls rapidly from above than 1 to nil. [illegible] is aminated to aspartic acid which then [illegible] with pyruvic acid to form alanine. Decarboxylic [illegible]-acids thus appear to be the primary products of amination in the synthesis of amino-acids. A similar mechanism is effective with kidney slices. P. O. M.

No 6

Lab of Chem and Metabolism of Proteins, Dept of Chem, VIEM

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

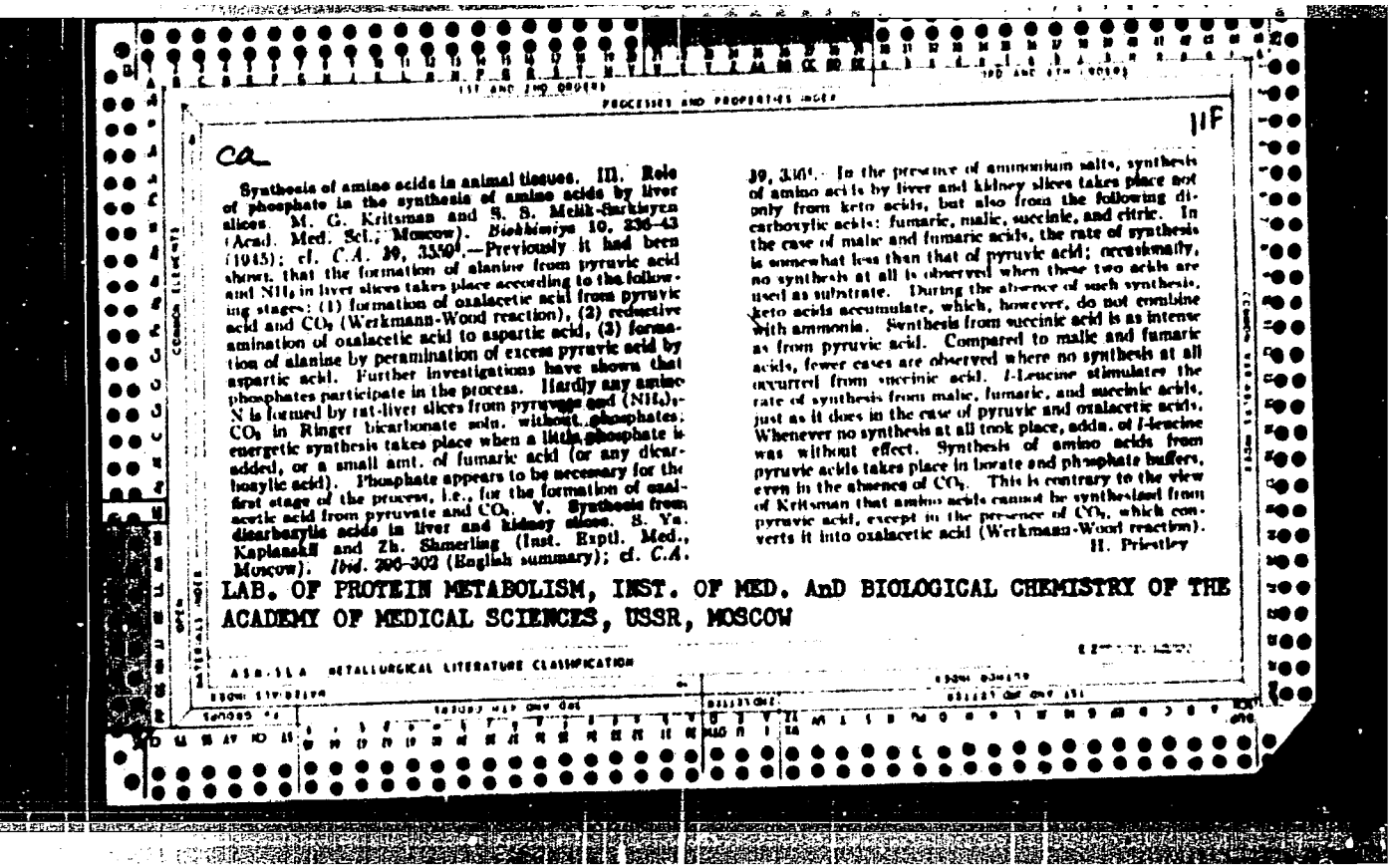
PROCESSES AND PROPERTIES INDEX

6 11F

Synthesis of amino acids in animal tissues. II. Role of dicarboxylic acids in the formation of amino acids in liver slices. M. G. Kritsman and S. R. Melik-Sarkisyan. *Biokhimiya* 10, 1-13(1945); cf. *C.A.* 39, 3814.—Addnl. evidence is furnished to support the hypothesis that rat-liver slices form *l*-alanine from pyruvate, NH_4 and CO_2 by way of oxaloacetate and aspartic acid. In the absence of CO_2, synthesis proceeds on the addn. of small amts. of ketodicarboxylic acids or their metabolic precursors. The effect is catalytic; about 20 times as much amino acid is formed as added dicarboxylic acid. In Ringer-bicarbonate soln. addn. of dicarboxylic acids inhibits N formation from NH_4 pyruvate. This is explained as due to competitive inhibition of enzyme systems involved in the synthesis. H. Priestley

Lab. of Chem. and Metabolism of Proteins, Chem. Sector, VIEM, Moscow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

11F

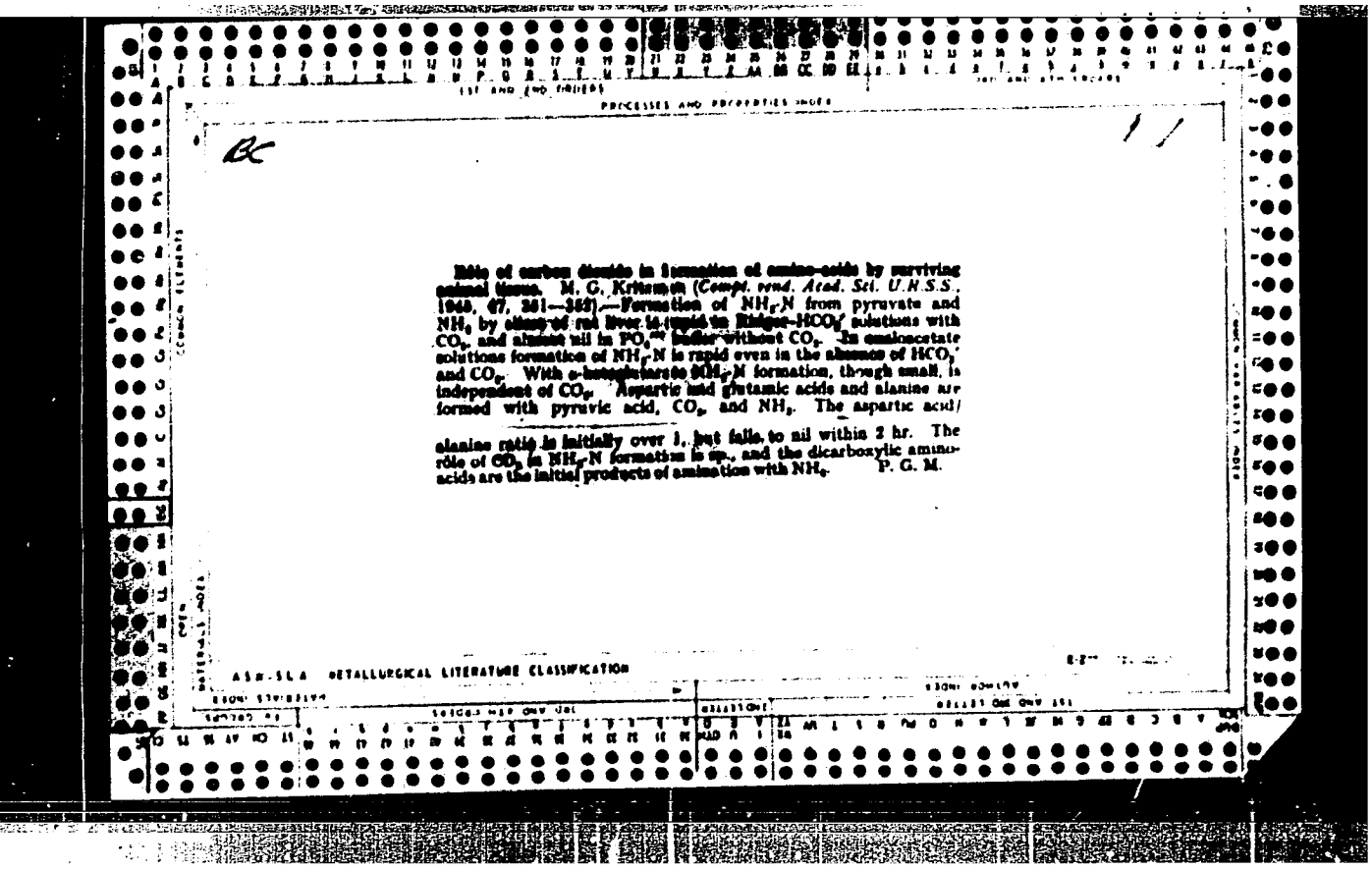
Ca

Synthesis of amino acids in animal tissues. III. Role of phosphate in the synthesis of amino acids by liver slices. M. G. Kritsman and S. S. Melik-Sarkisyan (Acad. Med. Sci., Moscow). *Biokhimiya* 10, 236–43 (1945); cf. *C.A.* 39, 3540.—Previously it had been shown that the formation of alanine from pyruvic acid and NH_4 in liver slices takes place according to the following stages: (1) formation of oxalacetic acid from pyruvic acid and CO_2 (Werkmann-Wood reaction), (2) reductive amination of oxalacetic acid to aspartic acid, (3) formation of alanine by peramination of excess pyruvic acid by aspartic acid. Further investigations have shown that phosphates participate in the process. Hardly any amino N is formed by rat-liver slices from pyruvate and $(NH_4)_2$-CO_3 in Ringer bicarbonate soln. without phosphates; energetic synthesis takes place when a little phosphate is added, or a small amt. of fumaric acid (or any dicarboxylic acid). Phosphate appears to be necessary for the first stage of the process, i.e., for the formation of oxalacetic acid from pyruvate and CO_2. V. Synthesis from dicarboxylic acids in liver and kidney slices. S. Ya. Kaplanskii and Zh. Shmerling (Inst. Exptl. Med., Moscow). *Ibid.* 296–302 (English summary); cf. *C.A.* 39, 3541. In the presence of ammonium salts, synthesis of amino acids by liver and kidney slices takes place not only from keto acids, but also from the following dicarboxylic acids: fumaric, malic, succinic, and citric. In the case of malic and fumaric acids, the rate of synthesis is somewhat less than that of pyruvic acid; occasionally, no synthesis at all is observed when these two acids are used as substrate. During the absence of such synthesis, keto acids accumulate, which, however, do not combine with ammonia. Synthesis from succinic acid is as intense as from pyruvic acid. Compared to malic and fumaric acids, fewer cases are observed where no synthesis at all occurred from succinic acid. *l*-Leucine stimulates the rate of synthesis from malic, fumaric, and succinic acids, just as it does in the case of pyruvic and oxalacetic acids. Whenever no synthesis at all took place, addn. of *l*-leucine was without effect. Synthesis of amino acids from pyruvic acids takes place in borate and phosphate buffers, even in the absence of CO_2. This is contrary to the view of Kritsman that amino acids cannot be synthesized from pyruvic acid, except in the presence of CO_2, which converts it into oxalacetic acid (Werkmann-Wood reaction).

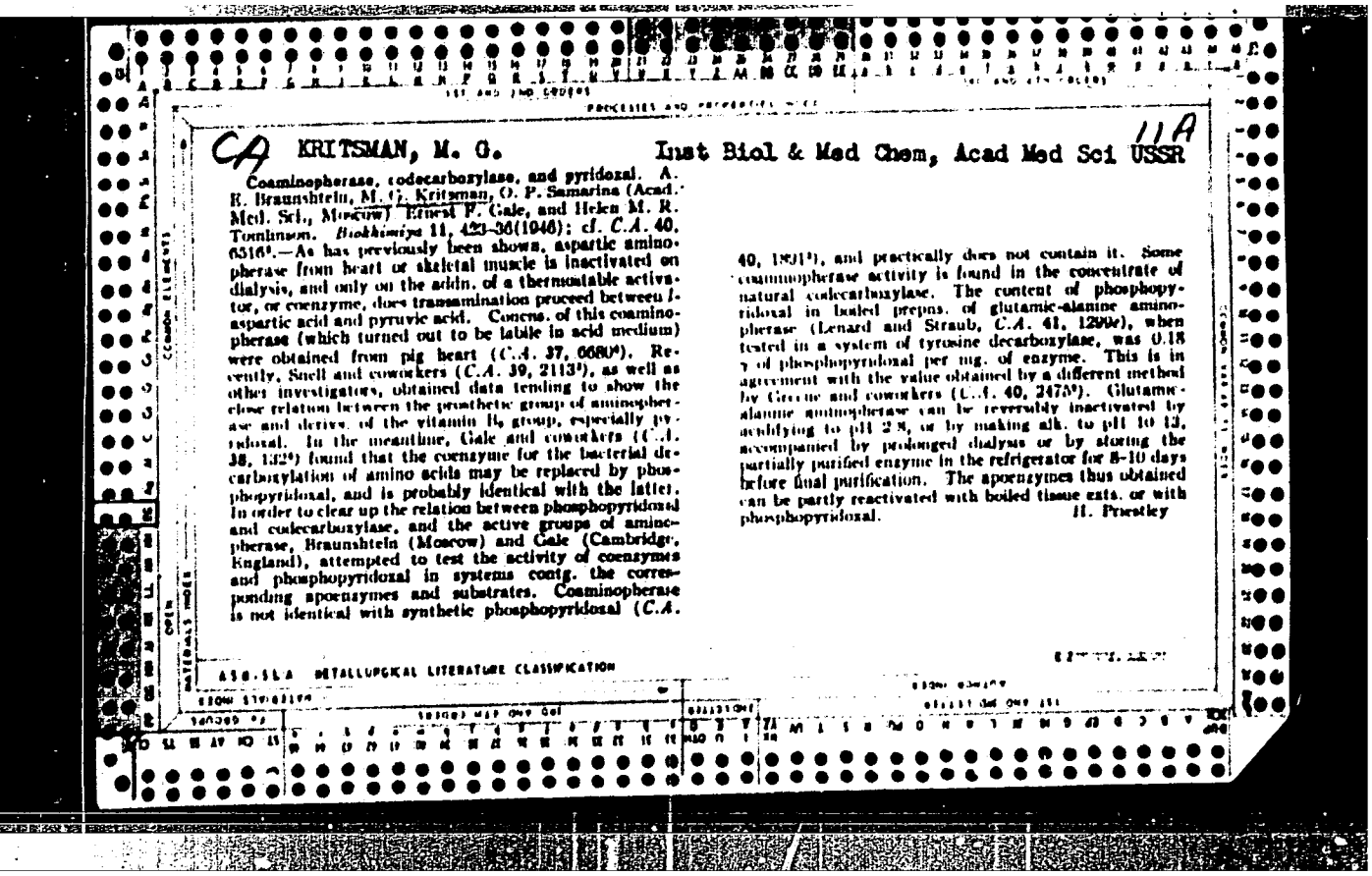
H. Priestley

LAB. OF PROTEIN METABOLISM, INST. OF MED. AnD BIOLOGICAL CHEMISTRY OF THE ACADEMY OF MEDICAL SCIENCES, USSR, MOSCOW

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION



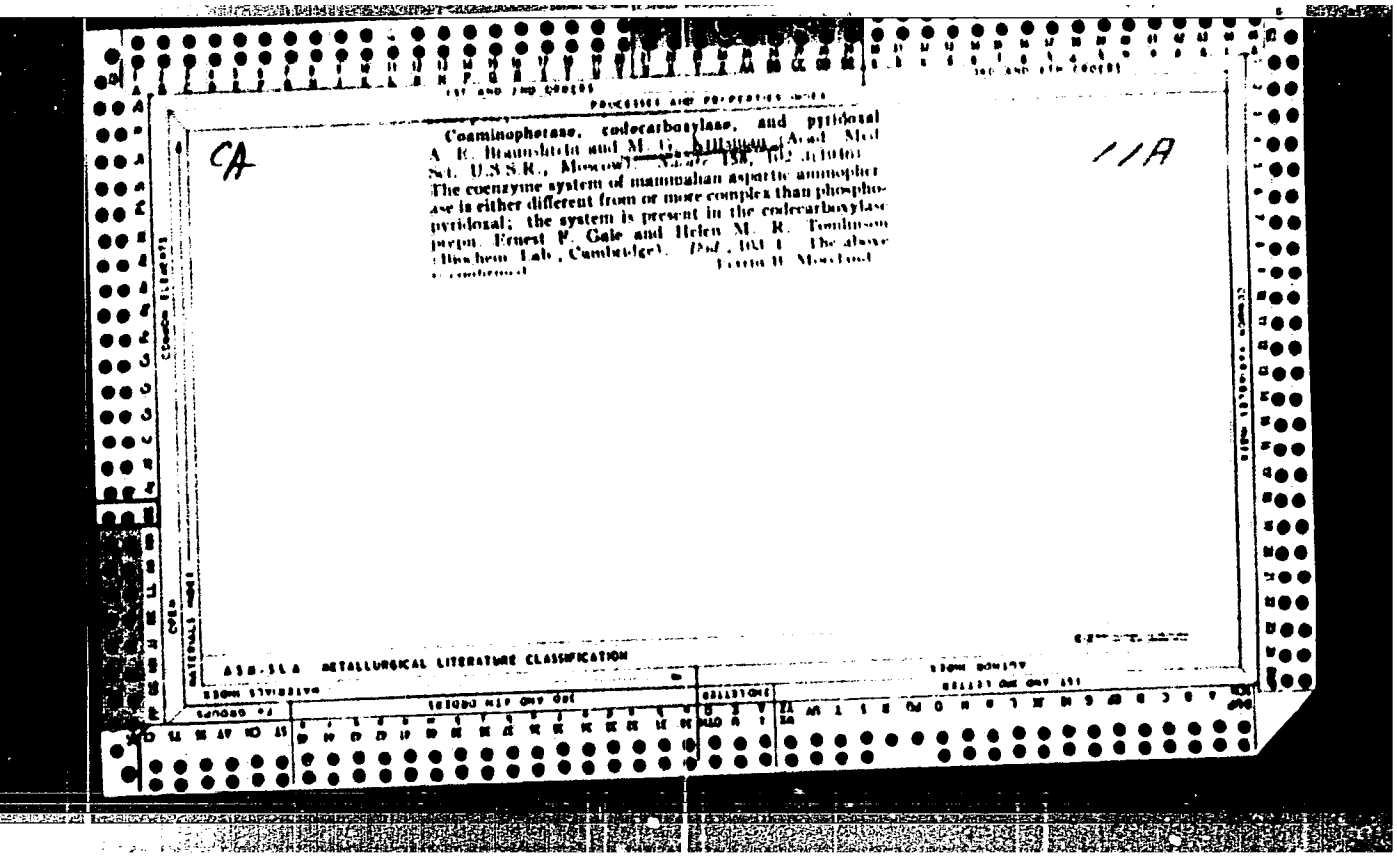
Rôle of carbon dioxide in formation of amino-acids by surviving animal tissues. M. G. Kritsman (*Compt. rend. Acad. Sci. U.R.S.S.*, 1949, 67, 361—363).—Formation of NH_2-N from pyruvate and NH_3 by slices of rat liver is rapid in Ringer-HCO_3^- solutions with CO_2 and almost nil in PO_4^{---} buffer without CO_2. In succinate solutions formation of NH_2-N is rapid even in the absence of HCO_3^- and CO_2. With α-ketoglutarate the NH_2-N formation, though small, is independent of CO_2. Aspartic and glutamic acids and alanine are formed with pyruvic acid, CO_2 and NH_3. The aspartic acid/alanine ratio is initially over 1, but falls to nil within 2 hr. The rôle of CO_2 in NH_2-N formation is up., and the dicarboxylic amino-acids are the initial products of amination with NH_3. P. G. M.

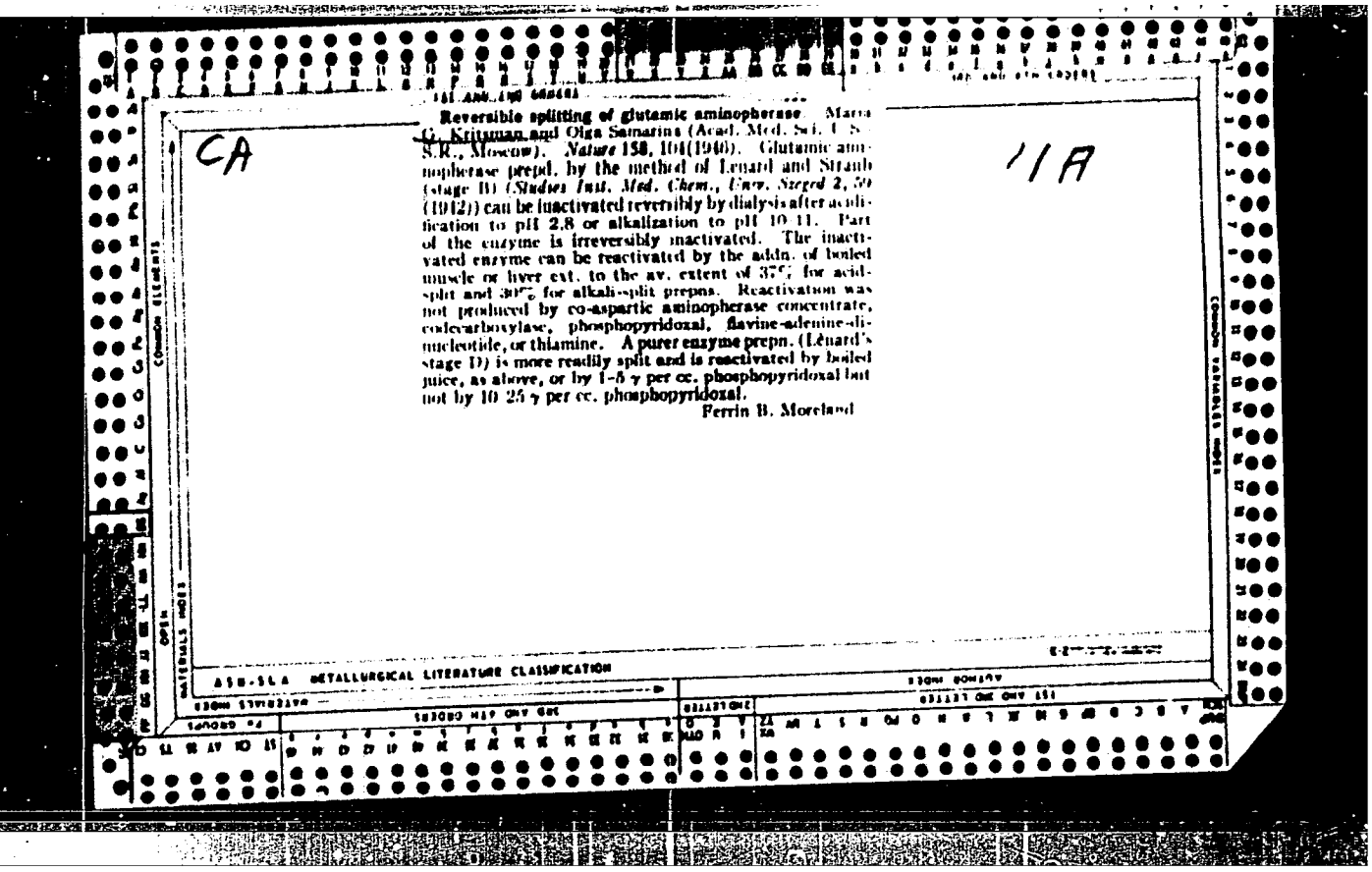


CA KRITSMAN, M. G. Inst Biol & Med Chem, Acad Med Sci USSR 11A

Coaminopherase, codecarboxylase, and pyridoxal. A. E. Braunshtein, M. G. Kritsman, O. P. Samarina (Acad. Med. Sci., Moscow) Ernest P. Gale, and Helen M. R. Tomlinson. *Biokhimiya* 11, 423-36(1946); cf. *C.A.* 40, 6516⁶.—As has previously been shown, aspartic aminopherase from heart or skeletal muscle is inactivated on dialysis, and only on the addn. of a thermostable activator, or coenzyme, does transamination proceed between *l*-aspartic acid and pyruvic acid. Concns. of this coaminopherase (which turned out to be labile in acid medium) were obtained from pig heart (*C.A.* 37, 6680⁶). Recently, Snell and coworkers (*C.A.* 39, 2113⁵), as well as other investigators, obtained data tending to show the close relation between the prosthetic group of aminopherase and deriv. of the vitamin B_6 group, especially pyridoxal. In the meantime, Gale and coworkers (*C.A.* 38, 1324⁶) found that the coenzyme for the bacterial decarboxylation of amino acids may be replaced by phosphopyridoxal, and is probably identical with the latter. In order to clear up the relation between phosphopyridoxal and codecarboxylase, and the active groups of aminopherase, Braunshtein (Moscow) and Gale (Cambridge, England), attempted to test the activity of coenzymes and phosphopyridoxal in systems contg. the corresponding apoenzymes and substrates. Coaminopherase is not identical with synthetic phosphopyridoxal (*C.A.* 40, 1801⁵), and practically does not contain it. Some coaminopherase activity is found in the concentrate of natural codecarboxylase. The content of phosphopyridoxal in boiled preps. of glutamic-alanine aminopherase (Lenard and Straub, *C.A.* 41, 1290e), when tested in a system of tyrosine decarboxylase, was 0.18 γ of phosphopyridoxal per mg. of enzyme. This is in agreement with the value obtained by a different method by Gale and coworkers (*C.A.* 40, 2475⁶). Glutamic-alanine aminopherase can be reversably inactivated by acidifying to pH 2.8, or by making alk. to pH 10.13, accompanied by prolonged dialysis or by storing the partially purified enzyme in the refrigerator for 8-10 days before final purification. The apoenzymes thus obtained can be partly reactivated with boiled tissue exts. or with phosphopyridoxal. H. Priestley

A50-5LA METALLURGICAL LITERATURE CLASSIFICATION





CA

11A

Reversible splitting of glutamic aminopherase. Maria G. Krituman and Olga Samarina (Acad. Med. Sci. U. S. S. R., Moscow). *Nature* 158, 104(1946). Glutamic aminopherase prepn. by the method of Lenard and Straub (stage II) (*Studies Inst. Med. Chem., Univ. Szeged* 2, 50 (1942)) can be inactivated reversibly by dialysis after acidification to pH 2.8 or alkalization to pH 10-11. Part of the enzyme is irreversibly inactivated. The inactivated enzyme can be reactivated by the addn. of boiled muscle or liver ext. to the av. extent of 37% for acid-split and 30% for alkali-split prepns. Reactivation was not produced by co-aspartic aminopherase concentrate, cocarboxylase, phosphopyridoxal, flavine-adenine-dinucleotide, or thiamine. A purer enzyme prepn. (Lenard's stage D) is more readily split and is reactivated by boiled juice, as above, or by 1–5 γ per cc. phosphopyridoxal but not by 10–25 γ per cc. phosphopyridoxal.

Ferrin B. Moreland

CA

The mechanism of formation of amino acids in surviving animal tissues from pyruvate and ammonia. M. G. Kritsman (Acad. Med. Sci., Moscow). *J. Biol. Chem.* 167, [illegible](1947). The synthesis of amino acids by surviving liver (and probably kidney) tissue involves the following reactions: (1) formation of oxalacetate from CO_2 and pyruvate (I) (Wood-Werkman reaction), requiring inorg. P and possibly followed by production of α-ketoglutaric acid through the tricarboxylic acid cycle; (2) formation of aspartic acid (or glutamic acid) from oxalacetic (or α-ketoglutaric) acid, ammonia (II), and an unidentified hydrogen donor; (3) formation of alanine by transamination between I and aspartic (or glutamic) acid. Using rat liver slices K. found that very little amino N (III) was formed in CO_2 free Ringer soln. contg. I and II. Addn. of CO_2 caused the induction of rapid III formation. Minimal amts. of III were formed in Ringer soln. contg. P, CO_2, and II but in which the I was replaced with α-ketobutyric, α-ketoisocaproic, or α-ketoglutaric acid. I could be replaced by oxalacetic acid or a small amt. of α-ketodicarboxylic acids or their metabolic precursors. With these compds. III formation was not stimulated by CO_2. The formation of oxalacetate from I and CO_2 required inorg. P. III formation from II and the dicarboxylic acids proceeded without I and irrespective of the presence or absence of CO_2 or added P. The role of transamination as the final step in alanine synthesis was confirmed by (1) the gradual conversion of aspartic acid into alanine in the course of amino acid formation, (2) the catalytic activity of the dicarboxylic acids in amino acid synthesis; (3) the parallel decrease of the rates of reductive amination and of transamination between aspartic acid and I with diln. or purification of cell-free liver prepns., and the concomitant partial reactivation of both processes by a supplement of the coenzyme of aspartic aminopherase. Reductive amination of I was demonstrated in homogenates or cell-free exts. of liver tissue when such prepns. were supplemented with cozymase, a precursor of oxalacetate and the coenzyme of aspartic aminopherase. Although postulated by others the present study apparently offers the first direct proof of [illegible] amino acid synthesis.

Carl C. Smith

11 A

KRITSMAN, M. G.

USSR/Chemistry - Synthesis
Chemistry - Amino Compounds

Jan/Feb 1948

"The Formation of Amino Nitrogen From Ammonium and Alpha-Keto Acids in Suspensions of B. Subtilis," A. S. Konikova, M. G. Kritsman, L. M. Yakobson, Lab of Chem of Nitrogen Replacement, Inst of Biol and Med Chem, Acad Med Sci USSR, Moscow, 2½ pp

"Biokhim" Vol XIII, No 1

Results of studies conducted to determine the effects of aminization of suspensions of B. subtilis with pyroracemic acid, alpha-ketoglutaric acid, and phenyl-pyroracemic acid.

Submitted 13 May 1947

PA 64T28

PA 12/49T80

KRITSMAN, M. G.

USSR/Medicine - Enzymes Jul/Aug 48
Medicine - Bacteria, Subtilis

"Formation of Amino Nitrogen from Ammonia and Alpha-Keto Acids With the Aid of B. Subtilis Ferments," M. G. Kritsman, L. M. Yakobson, and A. S. Konikova, Inst of Biol and Med Chem, Acad Med Sci USSR, Moscow, 4½ pp

"Biokhimiya" Vol XIII, No 4

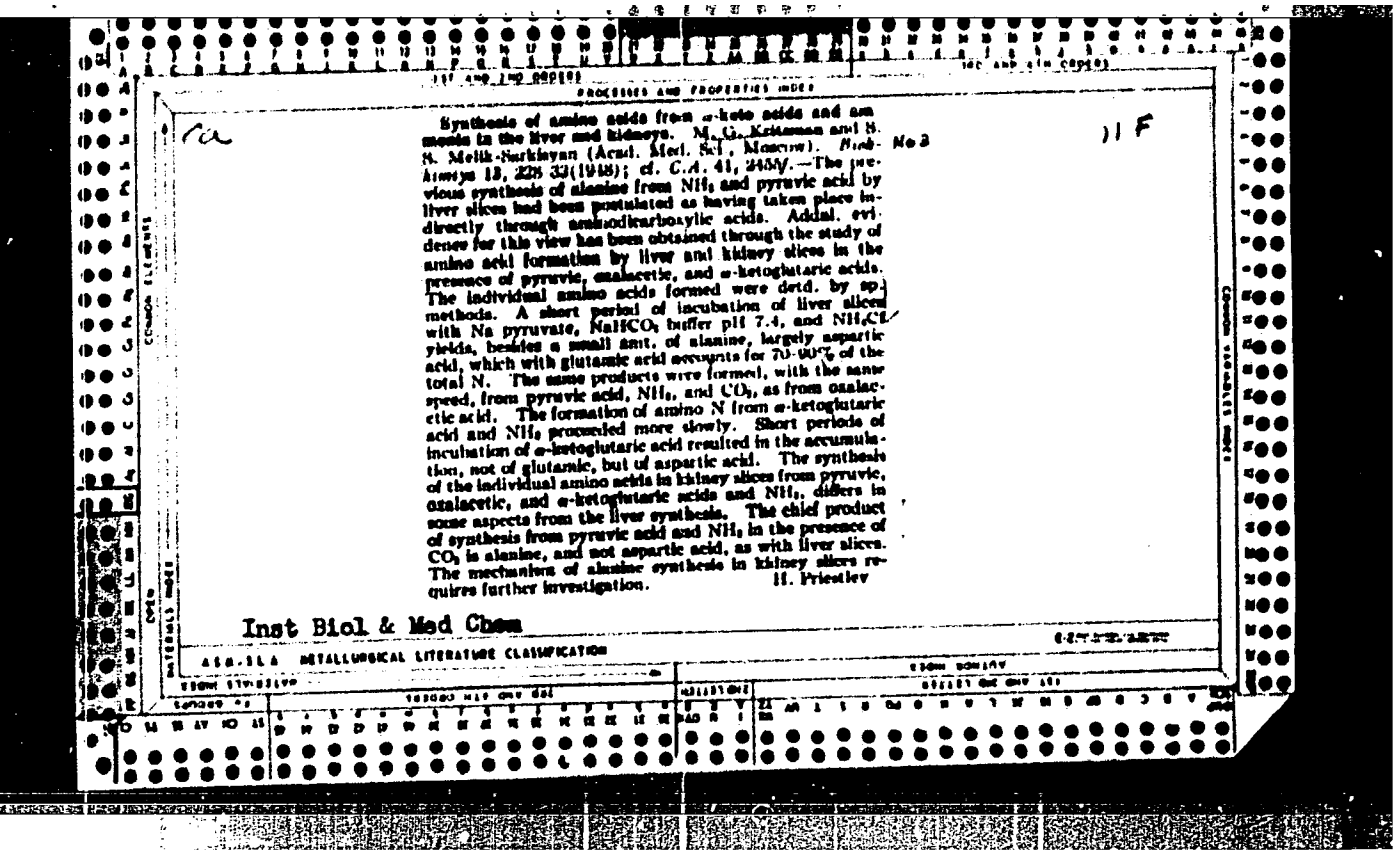
The ferment preparations (I) of the vegetative form of B. subtilis and phosphate extracts from an acetone preparation of these bacteria form NH_2-N from ammonia and pyroracemic acid. In the

12/49T80

USSR/Medicine - Enzymes (Contd) Jul/Aug 48

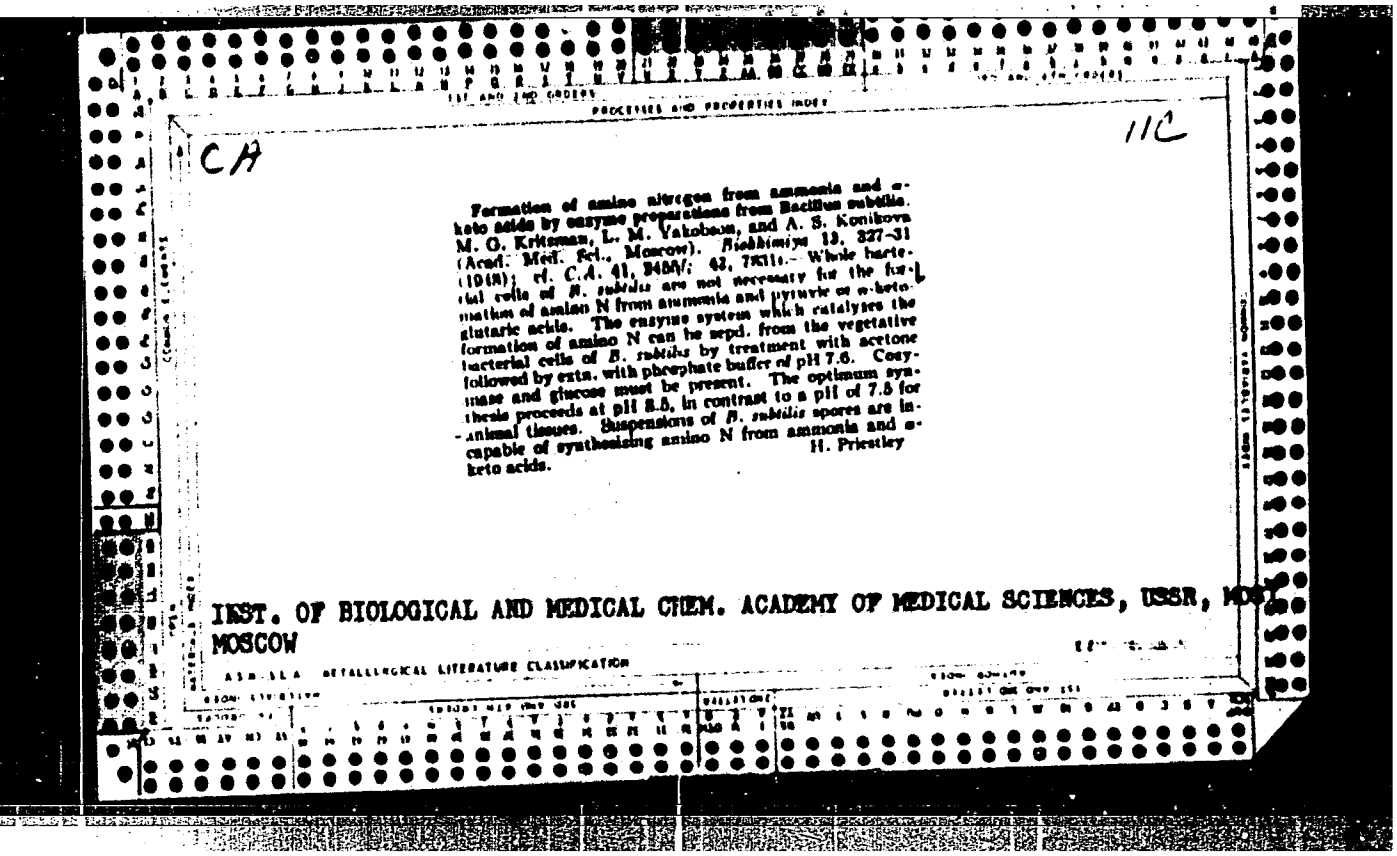
presence of ammonia, I can also form NH_2-N from α-ketoglutaric acid. Spore suspensions and spores treated with acetone cannot do this. Submitted 16 Dec 47.

12/49T80



Synthesis of amino acids from α-keto acids and ammonia in the liver and kidneys. M. G. Kritzman and S. S. Melik-Sarkisyan (Acad. Med. Sci., Moscow). *Biokhimiya* 13, 228-33(1948); cf. *C.A.* 41, 2455*f*.—The previous synthesis of alanine from NH_3 and pyruvic acid by liver slices had been postulated as having taken place indirectly through aminodicarboxylic acids. Addnl. evidence for this view has been obtained through the study of amino acid formation by liver and kidney slices in the presence of pyruvic, oxalacetic, and α-ketoglutaric acids. The individual amino acids formed were detd. by app. methods. A short period of incubation of liver slices with Na pyruvate, $NaHCO_3$ buffer pH 7.4, and NH_4Cl yields, besides a small amt. of alanine, largely aspartic acid, which with glutamic acid accounts for 70-80% of the total N. The same products were formed, with the same speed, from pyruvic acid, NH_3, and CO_2, as from oxalacetic acid. The formation of amino N from α-ketoglutaric acid and NH_3 proceeded more slowly. Short periods of incubation of α-ketoglutaric acid resulted in the accumulation, not of glutamic, but of aspartic acid. The synthesis of the individual amino acids in kidney slices from pyruvic, oxalacetic, and α-ketoglutaric acids and NH_3, differs in some aspects from the liver synthesis. The chief product of synthesis from pyruvic acid and NH_3 in the presence of CO_2 is alanine, and not aspartic acid, as with liver slices. The mechanism of alanine synthesis in kidney slices requires further investigation. H. Priestley

Inst Biol & Med Chem



CA

11C

Formation of amino nitrogen from ammonia and α-keto acids by enzyme preparations from Bacillus subtilis. M. O. Kritsman, L. M. Yakobson, and A. S. Konibova (Acad. Med. Sci., Moscow). *Biokhimiya* 13, 327-31 (1948); cf. C.A. 41, 3484*f*; 43, 7811i.— While bacterial cells of *B. subtilis* are not necessary for the formation of amino N from ammonia and pyruvic or α-ketoglutaric acids. The enzyme system which catalyses the formation of amino N can be sepd. from the vegetative bacterial cells of *B. subtilis* by treatment with acetone followed by extn. with phosphate buffer of pH 7.6. Coenzyme and glucose must be present. The optimum synthesis proceeds at pH 8.5, in contrast to a pH of 7.5 for animal tissues. Suspensions of *B. subtilis* spores are incapable of synthesising amino N from ammonia and α-keto acids.

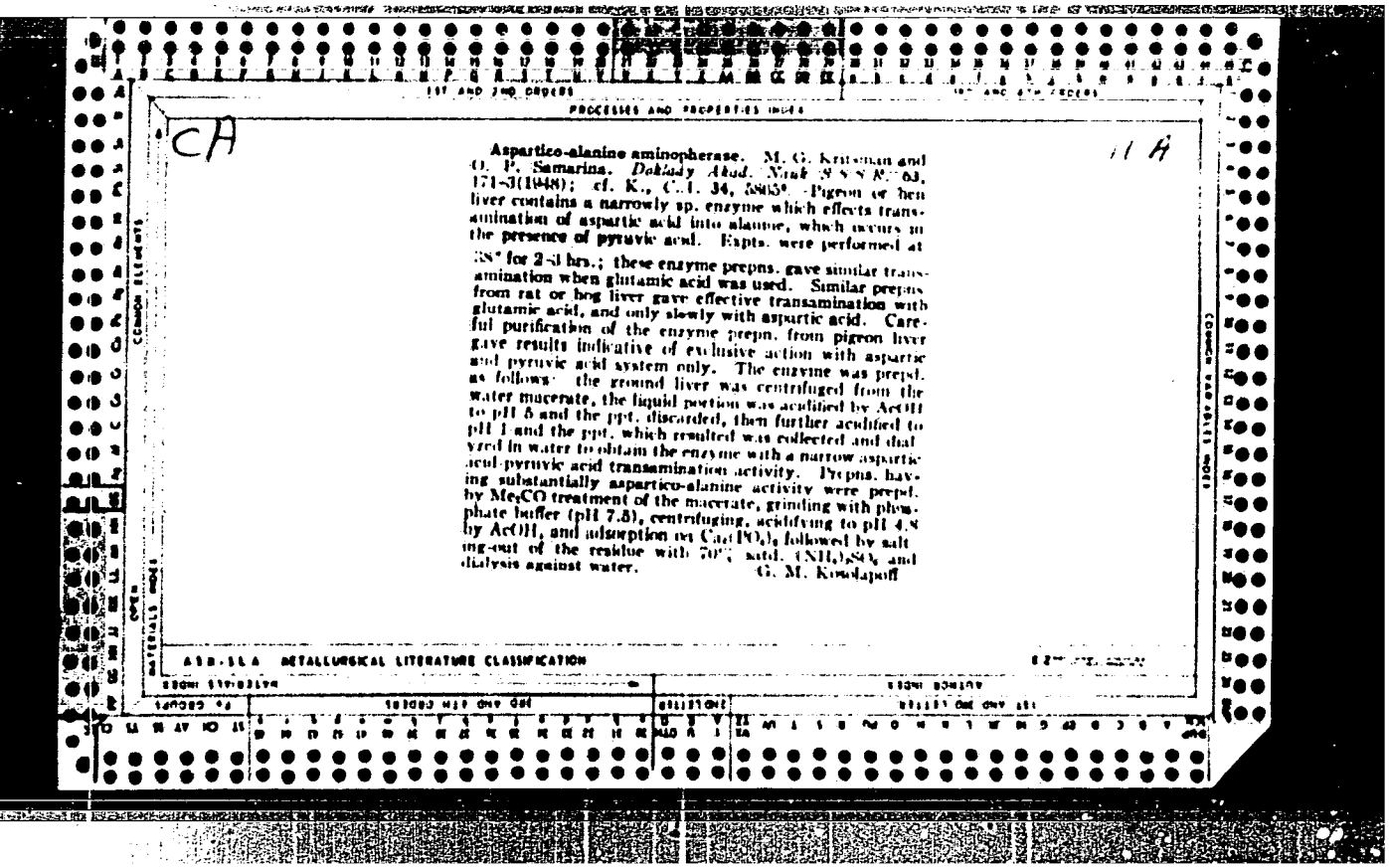
H. Priestley

INST. OF BIOLOGICAL AND MEDICAL CHEM. ACADEMY OF MEDICAL SCIENCES, USSR, MOST, MOSCOW

CA

Enzymic oxidation of aspartic acid. M. G. Kritsman, K. V. Dushinina, and O. P. Samarina. *Biokhimiya* 13, 538-45(1948). An enzyme is present in the liver which catalyzes both the oxidation and decarboxylation of L(−)-aspartic acid, without accumulation of NH_3, α-keto acid, or amino N. The enzyme is inactivated during the purification processes, such as isoelec. pptn. or fractional salting out with $(NH_4)_2SO_4$, followed by dialysis. The activity is restored on the addn. of cozymase, and in the case of drastic purification, by the addn. of diaphorase. The optimum pH is 7.5. The enzyme is prepd. by extg. 1-2 kg. hog liver from a freshly killed animal with 2 vols. of water for 12-16 hrs. at room temp. After centrifuging, the insol. portion is discarded. The ext. is treated with $(NH_4)_2SO_4$ to 25% satn. The mixt. is again centrifuged and the ppt. discarded. The soln. is satd. to 70% with $(NH_4)_2SO_4$, and the ppt. collected on a filter (enzyme "A"). Such an enzyme prepn. was usually purified further. Enzyme "A" retains its activity for 2-3 months when stored in the refrigerator. To obtain a more highly purified enzyme prepn., enzyme "A" is suspended in water, and $(NH_4)_2SO_4$ is added to 30% satn. The insol. protein is discarded. The soln. is fractionally salted out with $(NH_4)_2SO_4$. The ppt. is dialyzed for 18 hrs. The proteins which ppt. on dialysis are discarded; this protein fraction is practically inactive. The dialyzed soln. is acidified with HOAc to pH 4.8, and the ppt. collected on freshly prepd. $Ca_3(PO_4)_2$. After 20 min., the enzyme is eluted with M/8 phosphate buffer of pH 7.5 (enzyme "B"). The $Ca_3(PO_4)_2$ was prepd. by mixing equal vols. of 0.4 M Na_3PO_4 and 0.6 M $CaCl_2$. The protein fraction from 33 to 38% satn. with $(NH_4)_2SO_4$ had the max. activity. During 2-3 hrs.' incubation under aerobic conditions, 10-20% of the aspartic acid disappears, and CO_2 is evolved. A N compd. is formed, which, however, is not glycine, alanine, or serine. Under anaerobic conditions, no aspartic acid is lost, and no CO_2 is formed. The enzyme poisons NH_2OH, F, and ICH_2CO_2H, in concns. of 0.01-0.001 M inhibit O absorption by 50-80%; semicarbazide and cyanide in a concn. of 0.01 M completely check O absorption and CO_2 evolution. H. Priestley

LAB. OF ENZYMES, INST. OF BIOLOGICAL AND MED. CHEM. ACAD. OF MED. SCIENCES USSR, MOSCOW



CA

11 A

Aspartico-alanine aminopherase. M. G. Krivoman and O. P. Samarina. *Doklady Akad. Nauk S.S.S.R.* 63, 171-3(1948); cf. K., C.A. 34, 5805⁹. Pigeon or hen liver contains a narrowly sp. enzyme which effects transamination of aspartic acid into alanine, which occurs in the presence of pyruvic acid. Expts. were performed at 38° for 2-3 hrs.; these enzyme prepns. gave similar transamination when glutamic acid was used. Similar prepns. from rat or hog liver gave effective transamination with glutamic acid, and only slowly with aspartic acid. Careful purification of the enzyme prepn. from pigeon liver gave results indicative of exclusive action with aspartic and pyruvic acid system only. The enzyme was prepd. as follows: the ground liver was centrifuged from the water macerate, the liquid portion was acidified by AcOH to pH 5 and the ppt. discarded, then further acidified to pH 1 and the ppt. which resulted was collected and dialyzed in water to obtain the enzyme with a narrow aspartic acid-pyruvic acid transamination activity. Prepns. having substantially aspartico-alanine activity were prepd. by Me_2CO treatment of the macerate, grinding with phosphate buffer (pH 7.8), centrifuging, acidifying to pH 4.8 by AcOH, and adsorption on $Ca_3(PO_4)_2$ followed by salting-out of the residue with 70% satd. $(NH_4)_2SO_4$ and dialysis against water.

G. M. Kosolapoff

A58-SLA METALLURGICAL LITERATURE CLASSIFICATION

PA 55/49T6

KRITSMAN, M. G.

USSR/Chemistry - Amines Nov 48

"Aspartic Alanine Aminopherase," M. G. Kritsman, O. P. Samarina, Inst of Biol and Med Chem, Acad Med Sci USSR, 2½ pp

"Dok Ak Nauk SSSR" Vol LXIII, No 2

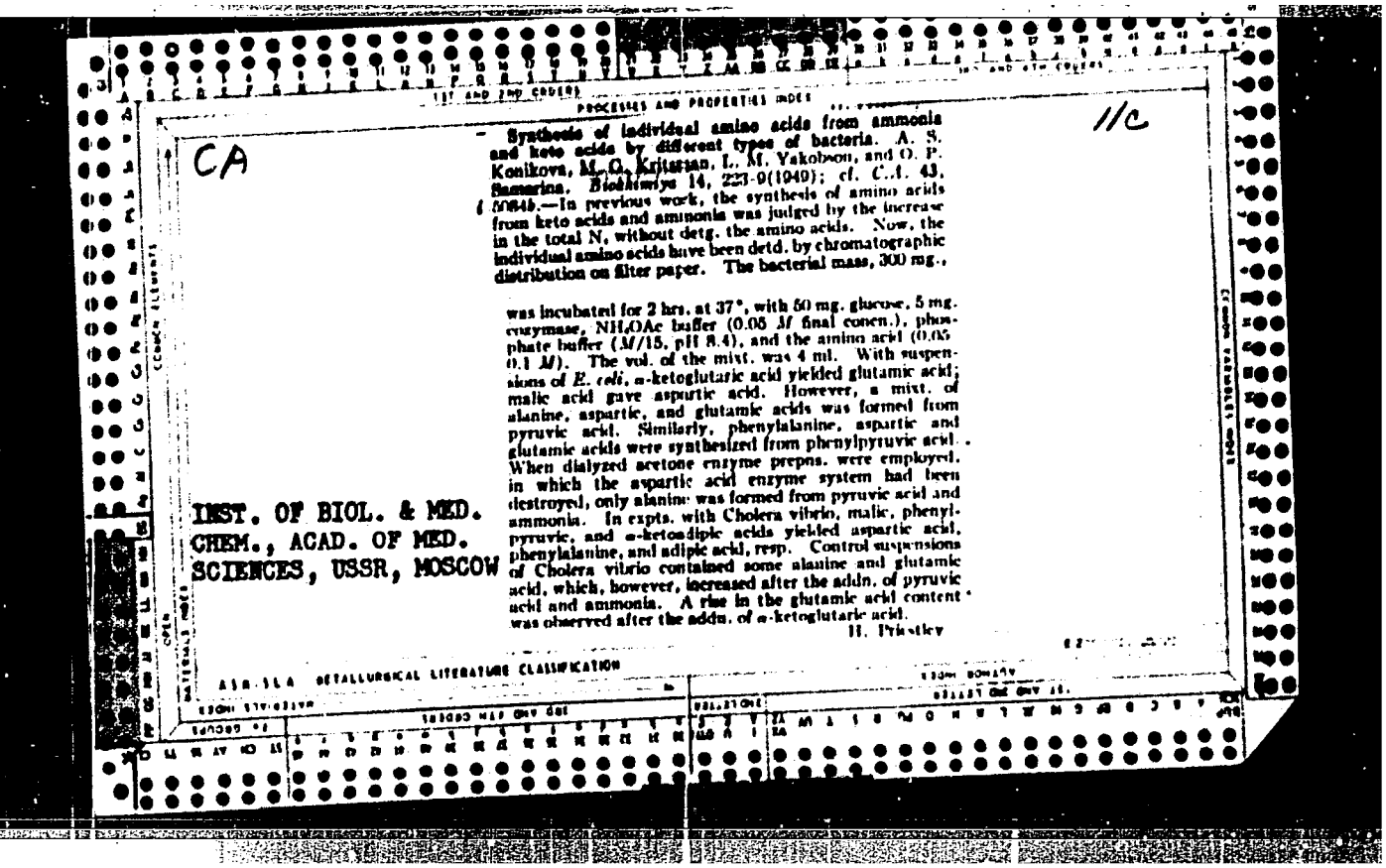
Tabulated data from experiments with liver extracts of birds and other animals leads to conclusion that there is a specific enzyme in the liver which catalyzes reamination between aspartic and pyroracemic acids. Submitted by Acad A. I. Oparin 8 Sep 48.

55/49T6

KRITZMAN, M. G.

Synthesis of amino-acids from ammonia and keto-acids by different bacteria. L. M. Yakobson, A. S. Konikova, M. G. Kritzman, and S. B. Melik-Sarkisan (Biochimia, 1949, 14, 14-19).- A study was made of the capacity of a number of organisms (B. subtilis, B. brevis, Staphylococcus, C. diphtheria, B. coli, B. typhosus, V. cholera, and V. paracholera) to synthesise amino-acid (as determined by amino-N) from NH_4 salts and a number of acids (pyuvic, phenylpyuvic, x-ketoglutaric, malic, x-ketoadipic and glyoxylic). B. subtilis and V. cholera are by far the most active and can synthesise amino-N from all keto-acids tested. The specificity of the enzymes required for the different reactions varies as regards stability towards acetone, need for presence of glucose and cozymase, and optimum pH.

D. M. SMITH.



CA

11c

Synthesis of individual amino acids from ammonia and keto acids by different types of bacteria. A. S. Konikova, M. O. Kritzman, L. M. Yakobson, and O. P. Samarina. *Biokhimiya* 14, 223-9(1949); cf. C.A. 43, 7064b.—In previous work, the synthesis of amino acids from keto acids and ammonia was judged by the increase in the total N, without detg. the amino acids. Now, the individual amino acids have been detd. by chromatographic distribution on filter paper. The bacterial mass, 300 mg., was incubated for 2 hrs. at 37°, with 50 mg. glucose, 5 mg. cozymase, NH_4OAc buffer (0.05 *M* final concn.), phosphate buffer (*M*/15, pH 8.4), and the amino acid (0.05–0.1 *M*). The vol. of the mixt. was 4 ml. With suspensions of *E. coli*, α-ketoglutaric acid yielded glutamic acid; malic acid gave aspartic acid. However, a mixt. of alanine, aspartic, and glutamic acids was formed from pyruvic acid. Similarly, phenylalanine, aspartic and glutamic acids were synthesized from phenylpyruvic acid. When dialyzed acetone enzyme prepns. were employed, in which the aspartic acid enzyme system had been destroyed, only alanine was formed from pyruvic acid and ammonia. In expts. with Cholera vibrio, malic, phenylpyruvic, and α-ketoadipic acids yielded aspartic acid, phenylalanine, and adipic acid, resp. Control suspensions of Cholera vibrio contained some alanine and glutamic acid, which, however, increased after the addn. of pyruvic acid and ammonia. A rise in the glutamic acid content was observed after the addn. of α-ketoglutaric acid.

H. Priestley

INST. OF BIOL. & MED. CHEM., ACAD. OF MED. SCIENCES, USSR, MOSCOW

USSR/Medicine - Liver
Medicine - Amino Acids

Mar 49

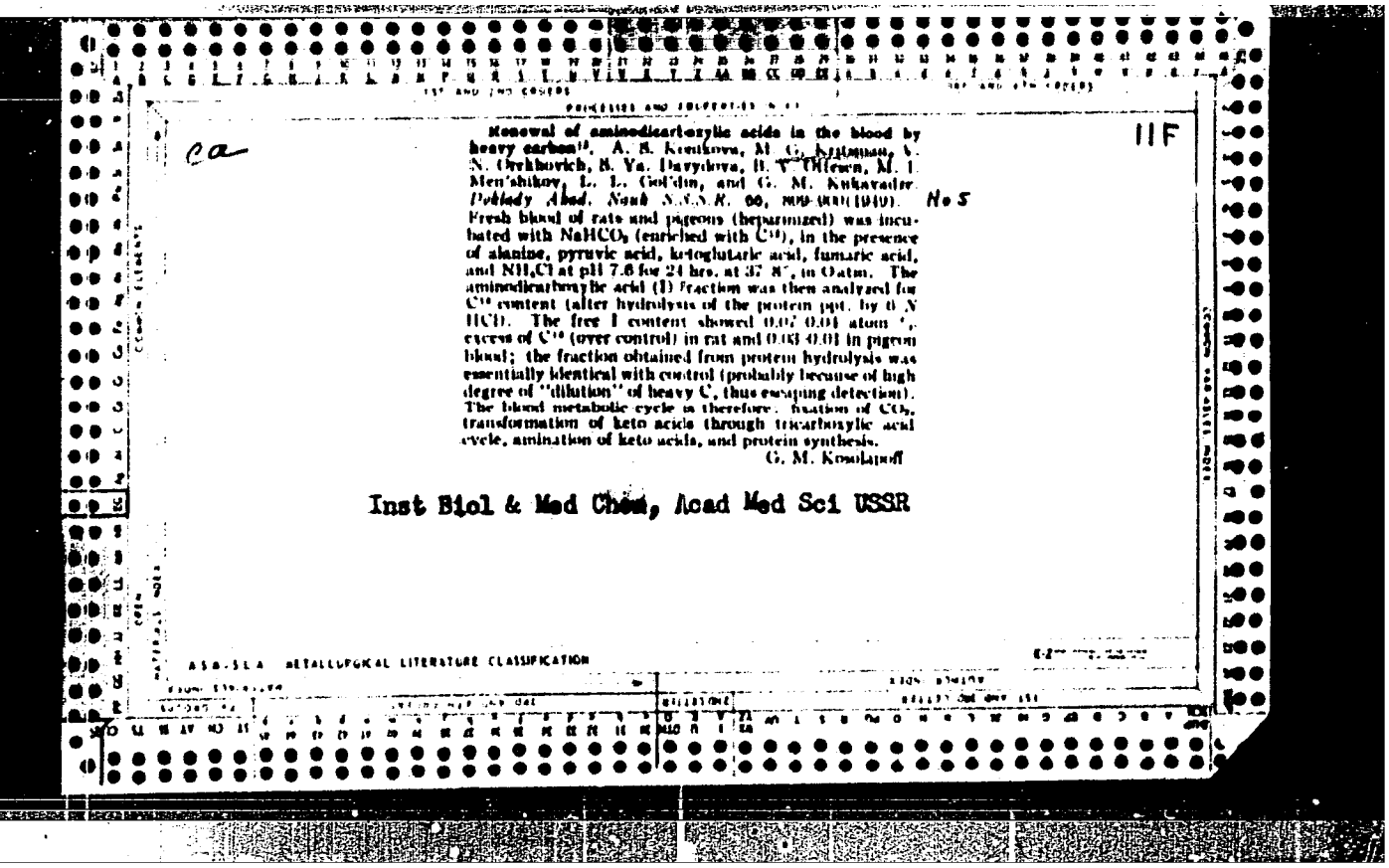
"Research with C^{13} on Restoring Dicarboxylic Amino Acids in the Liver," A. S. Konikova, V. N. Orekhovich, M. G. Kritsman, S. Ya. Davydova, A. S. Khokhlov, N. G. Kukavadze, B. V. Ottesen, N. I. Menshikov, L. L. Gol'din, Inst Biol and Med Chem, Acad Med Sci USSR, 3 pp

"Dok Ak Nauk SSSR" Vol LXV, No 3

Using C^{13}, investigated the restoration of aminodicarboxylic acids of proteins in a normal and regenerated liver, and in sections of the liver adjoining the regenerate and removed from it. Concludes that protein exchange in regenerated tissue is characterized neither by an increased, in comparison with exchange in normal tissue, formation speed of dicarboxylic amino acids, nor by a more intensive inclusion of them in the proteins.

Submitted by Acad A. I. Oparin, 26 Jan 49

PA 39/49T65

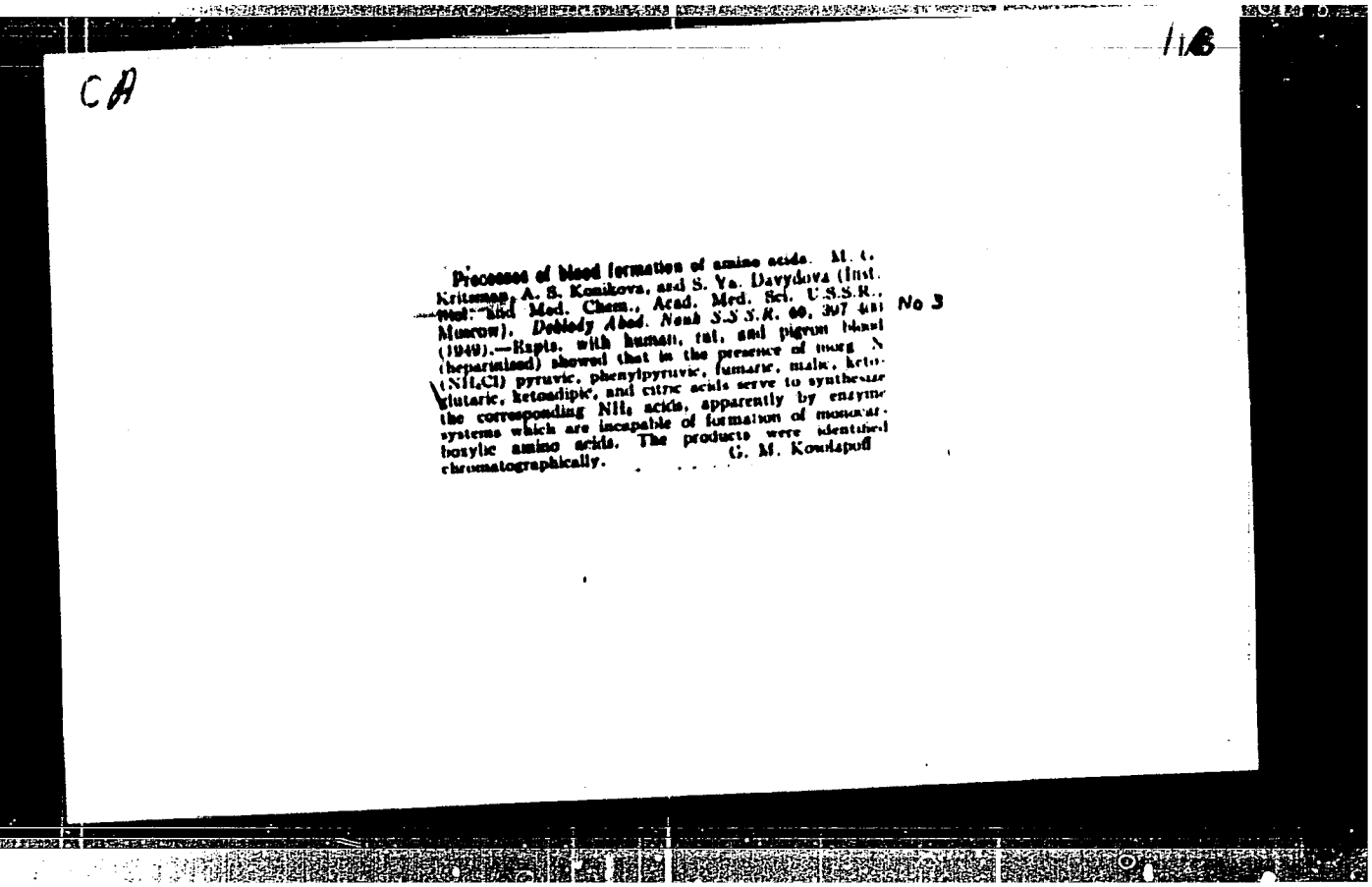


Renewal of aminodicarboxylic acids in the blood by heavy carbon[10]. A. S. Kreitzova, M. G. Krinman, L. N. Orekhovich, S. Ya. Davydova, B. V. Ol'khov, M. I. Men'shikov, L. L. Gol'din, and G. M. Kukhaleishvili. *Doklady Akad. Nauk S.S.S.R.* 66, [illegible] (1949). No 5

Fresh blood of rats and pigeons (heparinized) was incubated with $NaHCO_3$ (enriched with C^{13}), in the presence of alanine, pyruvic acid, ketoglutaric acid, fumaric acid, and NH_4Cl at pH 7.6 for 24 hrs. at 37.8°, in O atm. The aminodicarboxylic acid (I) fraction was then analyzed for C^{13} content (after hydrolysis of the protein ppt. by 6 N HCl). The free I content showed 0.07 0.01 atom % excess of C^{13} (over control) in rat and 0.03 0.01 in pigeon blood; the fraction obtained from protein hydrolysis was essentially identical with control (probably because of high degree of "dilution" of heavy C, thus escaping detection). The blood metabolic cycle is therefore: fixation of CO_2, transformation of keto acids through tricarboxylic acid cycle, amination of keto acids, and protein synthesis.

G. M. Kosolapoff

Inst Biol & Med Chem, Acad Med Sci USSR



CA

1/6

Processes of blood formation of amino acids. M. G. Kritsman, A. S. Konikova, and S. Ya. Davydova (Inst. Biol. Med. Chem., Acad. Med. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 66, 307-10 (1949).—Rapts. with human, rat, and pigeon blood (heparinized) showed that in the presence of inorg. N (NH_4Cl) pyruvic, phenylpyruvic, fumaric, malic, ketoglutaric, ketoadipic, and citric acids serve to synthesize the corresponding NH_2 acids, apparently by enzyme systems which are incapable of formation of monocarboxylic amino acids. The products were identified chromatographically. G. M. Kondapuff

No 3

CA KRITSMAN, M. G. Inst Biol & Med Chem, Acad Med Sci USSR 117

Mechanism of amino acid synthesis in the liver. M. G. Kritsman and K. V. Druzhinina. *Doklady Akad. Nauk S.S.S.R.* 69, 249-52(1949); cf. C.A. 42, 8918i. Anaerobic treatment of rat-liver homogenate in isotonic KCl at pH 7.6 with: lactic acid-NH_4Cl, pyruvic acid-NH_4Cl, hydroxyglutaric acid-NH_4Cl, and ketoglutaric acid-NH_4Cl, with or without carbonyl-binding reagents (arsenite, cyanide, hydroxylamine), showed that synthesis of glutamic acid and alanine occurs from the corresponding keto, or OH acids and NH_4, with the same intensity; this indicates the presence of a suitable enzyme system catalyzing amination of hydroxy acids. G. M. Kosolapoff

1951

KRITSMAN, M.G.; KONIKOVA, A.S.

Amino-acid syntheses in living organisms and in bacterial cells.
Uspekhi Biol. Khim. 1, 203-15 '50. (MLRA 5:8)
(CA 47 no.14:7008 '53)

CA

11C

Amino acid composition of bacteria. O. P. Samarina, M. G. Kritsman, L. M. Yakobson, and A. S. Konikova (Acad. Med. Sci., Moscow). *Biokhimiya* 15, 287-90 (1950).—The amino acid compn. of cholera, cholera-like vibrios, and of saprophytic types of cocci were investigated by two dimensional paper chromatography (Pulson, *C.A.* 44, 2878g), with the object of correlating the amino acid compn. of bacteria with their form and pathogenicity. The cholera and cholera-like vibrios contained one unidentified and the following known amino acids: aspartic and glutamic acids, serine, glycine, threonine, α-alanine, β-alanine, tyrosine, valine, proline, histidine, leucine, phenylalanine, arginine, lysine, and α-aminobutyric acid. A qual. difference was not found between the amino acid compn. of pathogenic cholera vibrios and the nonpathogenic cholera-like vibrios. In the hydrolysates of proteins from cocci were found the same 10 amino acids but no α-aminobutyric acid and no unidentified acid. In some chromatograms, however, these 2 missing amino acids were also weakly developed. H. Priestley

THE INST. OF BIOL. AND MED. CHEM., ACAD. OF MED. SCIENCES, USSR, MOSCOW

KRITSMAN, M. D.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Biological Chemistry

Separation of enzymes by paper column chromatography. M. G. Kritsman and M. B. Leibzon (Inst. Biol. and Med. Chem., Acad. Med. Sci. U.S.S.R., Moscow). *Ukrain. Biokhim. Zhur.* 22, 430–4(1950)(in Russian).—As test materials, enzyme prepns. of differing stages of purification, and concd. brain exts. from tissues, were used. Separn. occurred by varying $(NH_4)_2SO_4$ concn. and pH, and using from 500 to 900 filter papers, 9 cm. diam. At the 40th paper on the column there were placed 10–20 papers satd. with a soln. of enzyme. The entire column was clamped between two plates of non-corrodable material. A siphon tube was placed between a vessel contg. 15–20% $(NH_4)_2SO_4$ at pH 7, and the column top. Soln. level corresponded to top of column. Through perforations the distributing tank on the column top the liquid was infused into the filter papers. A concn. gradient was produced by the addn. of H_2O, or low-concn. $(NH_4)_2SO_4$, from a dropping funnel, to the $(NH_4)_2SO_4$ soln.; the speed of entering liquid corresponded to the speed of exit liquid. A stirrer was arranged for uniform mixing, temp. 10°; 18° gave distortions. After flow was stopped every 20th filter paper was analyzed for enzymic activity, $(NH_4)_2SO_4$ concn., and protein. In an aminopherase expt. its activity was detd. by the colorimetric method of Leonard and Straub (*Studies Inst. Med. Chem.*, Univ. Szeged 11. 59(1941)). Activities of the enzymes were detd. from the filters, without preliminary extn., by immersion into substrate. The amt. of protein was detd. by the biuret reaction, and $(NH_4)_2SO_4$ by Nesslerization. Aminopherase from heart muscle was prepd. by fractional salting out with $(NH_4)_2SO_4$, the protein fraction salted out by 15–16% $(NH_4)_2SO_4$ being used. Max. cholinesterase activity was found in the 180–200 filter paper zone. The concn. of $(NH_4)_2SO_4$ in this zone corresponded to 6–15.8% $(NH_4)_2SO_4$

CA

11G

Investigation on the nitrogen metabolism in diabetes with radioactive methionine. M. G. Kritsman, A. S. Konikova, D. G. Stepanyan, and L. M. Pyatigorskaya (Acad. Med. Sci., Moscow). *Biokhimiya* 16, 240-9(1951); cf. Friedberg and Greenberg, *C.A.* 42, 1228d.—Healthy rats after treatment with insulin show a 25% more intense synthesis by the kidneys of proteins from S-contg. amino acids. The insulin has no effect on protein synthesis in other organs or tissues. A 40% decrease, as compared to controls, in the intensity of protein formation from S-contg. amino acids is shown by the kidneys of rats with alloxan diabetes. Protein synthesis decreases in the liver by 15-20% only in cases of grave diabetic conditions. Only very slight changes are observed in protein synthesis by other organs. The injection of therapeutic doses of insulin into diabetic animals activates the process of protein formation in the kidneys to a higher level (35-40%) than in healthy animals (without insulin). Here also introduction of insulin has no effect on the activation process of amino acid conversion into protein in other organs. Insulin participates in the protein metabolism of the kidneys. H. Priestley

Inst. of Biol. And Med. Chem. Acad. of Med. Sciences, USSR, Moscow

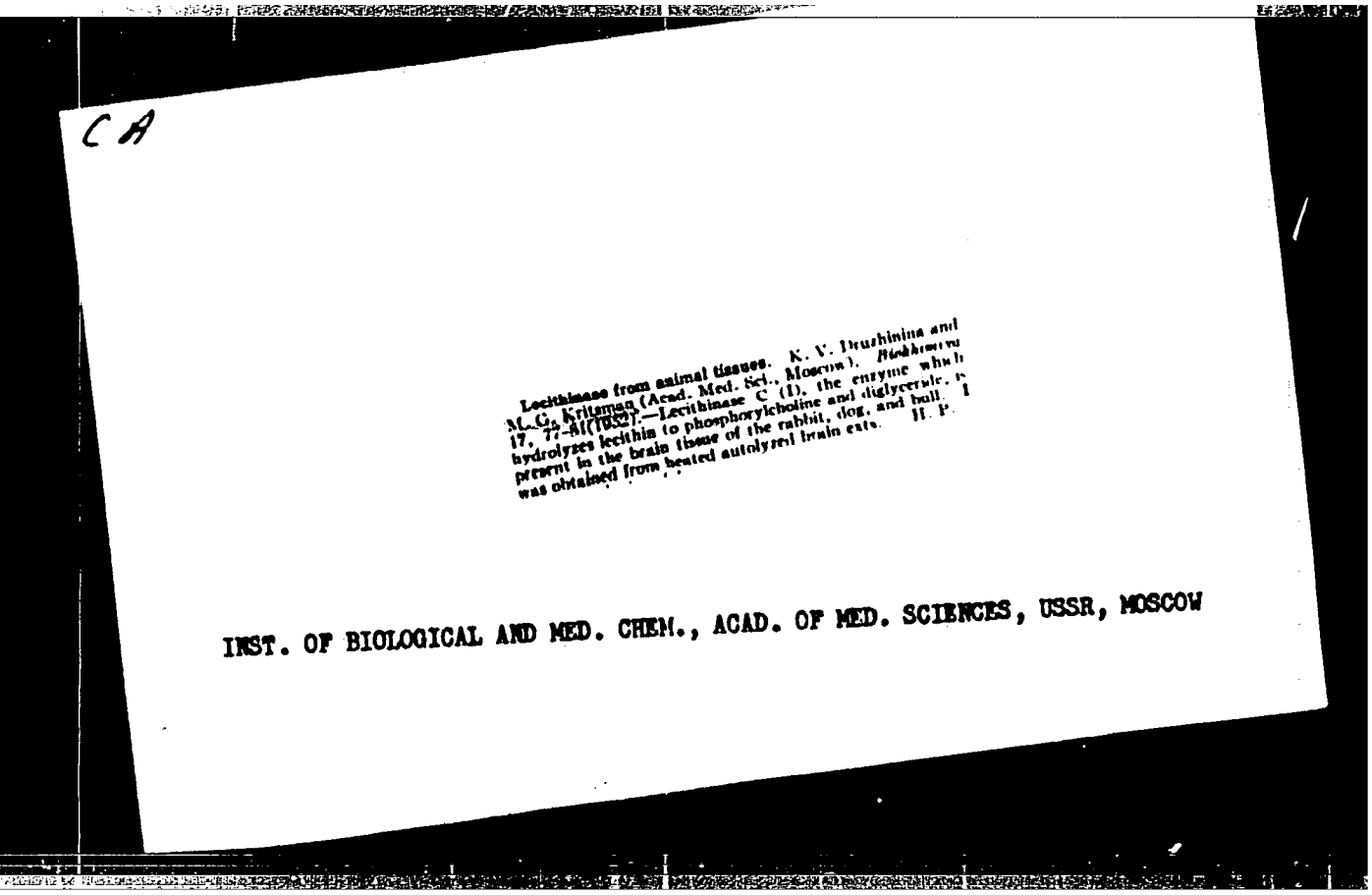
11C

CA

Microbiological applications of tracer atoms. A. S. Konikova and M. G. Kritsman (Biochem. Research Inst., Acad. Med. Sci., Moscow). *Mikrobiologiya* 20, 58-71 (1951).—Uses of C^{11}, C^{13}, and C^{14} are reviewed as to biosynthesis of CH_4, HCOOH, AcOH, and citric acid. Attention is also given to N^{15} for N fixation studies, and to D for studying H metabolism in bacteria. 44 references.
Julian F. Smith

[redacted], A.S.

"Use of Atoms In Microbiology," Mikrobiologiya, 21, #5, 1951.



CA

Lecithinase from animal tissues. K. V. Brushinina and M. G. Kritsman (Acad. Med. Sci., Moscow). *Biokhimiya* 17, 77–81(1952).—Lecithinase C (I), the enzyme which hydrolyzes lecithin to phosphorylcholine and diglyceride, is present in the brain tissue of the rabbit, dog, and bull. I was obtained from heated autolyzed brain ests. H. P.

INST. OF BIOLOGICAL AND MED. CHEM., ACAD. OF MED. SCIENCES, USSR, MOSCOW

USSR/Medicine - Protein Metabolism, Jul/Aug 52
Toxicology, Isotopes

"Inclusion of S35 Methionine and C14 Glycine Into the Proteins of Enzymes and Blood Plasma," M. G. Kritsman, A. S. Konikova, Ts. D. Osipenko

"Biokhimiya" Vol 17, No 4, pp 489-494.

The experiments described establish that inclusion of the amino acids in question into noncellular proteins takes place in human plasma and serum, the plasma and serum of a number of birds and animals, albumin, fibrin, plasmin, trypsine, and pepain.

236T12

Enzyme poisons (KCN, p-hydroxyquinoline, quinalizarin, alpha-nitroso-beta-naphthol, monoiodoacetic acid, sodium azide, sodium arsenite, 2,4-dinitrophenol) inhibit the inclusion of methionine and glycine into the proteins of plasma and trypsine. The results of these experiments (carried out in vitro) open up wide possibilities of investigation by the isotope method of changes which plasma proteins undergo in the intact organism and of the utilization of proteins administered for parenteral nutrition.

236T12

K
KRITSMAN, M. G.

KRITSMAN, M. G.

KRITSMAN, M. G.

Enzymes

Present day concepts of adaptive enzymes.
Mikrobiologiia 21, no. 4, 1952.

Monthly List of Russian Accessions, Library of Congress November 1952. UNCLASSIFIED.

Radiomethionine and D_2O studies of the renewal of proteins in rats with biotin deficiency. M. G. Kritsman, A. S. Konikova, and O. P. Yukhnevskaya. *Trudy Primenen. Radioaktiv. Izotop. v Med.* (Moscow: Medgiz) 1953, 241-6; *Referat. Zhur. Khim., Biol. Khim.* 1955, No. 3235.—Rats with expti. biotin deficiency received methionine-S^{35} (I) intravenously. Radioactivity was detd. 17–18 hrs. later in the proteins of the different organs. Inclusion of I into the proteins of organs of rats with biotin deficiency was lower than in the controls. The administration of 10 γ of biotin (II) per day on two successive days prior to the injection of I raised its inclusion to normal. Deficiency of II in young rats has a more pronounced neg. effect than in adult rats. In vitro expts. with organ tissues gave similar results. Rate of inclusion of I into the proteins of tissue slices of the liver and into blood plasma in vitro indicated that the addn. of II to the medium activated the inclusion of I into the proteins. B. S. Levine

(R)

KRAVCHENKO, N.A.; SAMARINA, O.P.; KRITSMAN, M.G.

Modification of the method of the electrophoretic separation of proteins of filter paper. Biokhimiya 18, 34-6 '53. (MLRA 6:1)
(CA 47 no.15:7579 '53)

1. Inst. Biol. Med. Chem., Acad. Med. Sci U.S.S.R., Moscow.

KRITSMAN, M. G.

Chemical Abst.
Vol. 48 No.8
Apr. 25, 1954
Biological Chemistry

Changes in the activity of proteolytic enzymes in the aorta in experimental atherosclerosis. M. V. Bavina and M. G. Kritsman (Inst. Therapy, Acad. Med. Sci. U.S.S.R., Moscow). *Biokhimiya* 18, 548-51(1953).—In exptl. atherosclerosis of the rabbit changes occur in the proteolytic activity of enzymes in the different organs, the most pronounced being heightened activity of autolysis and proteolysis, and a reduction in the synthesis of protein, especially in the aorta. The relation of this to the pathology of this condition is pointed out. B. S. Levine

BAVINA, M.V.; KRITSMAN, M.G.

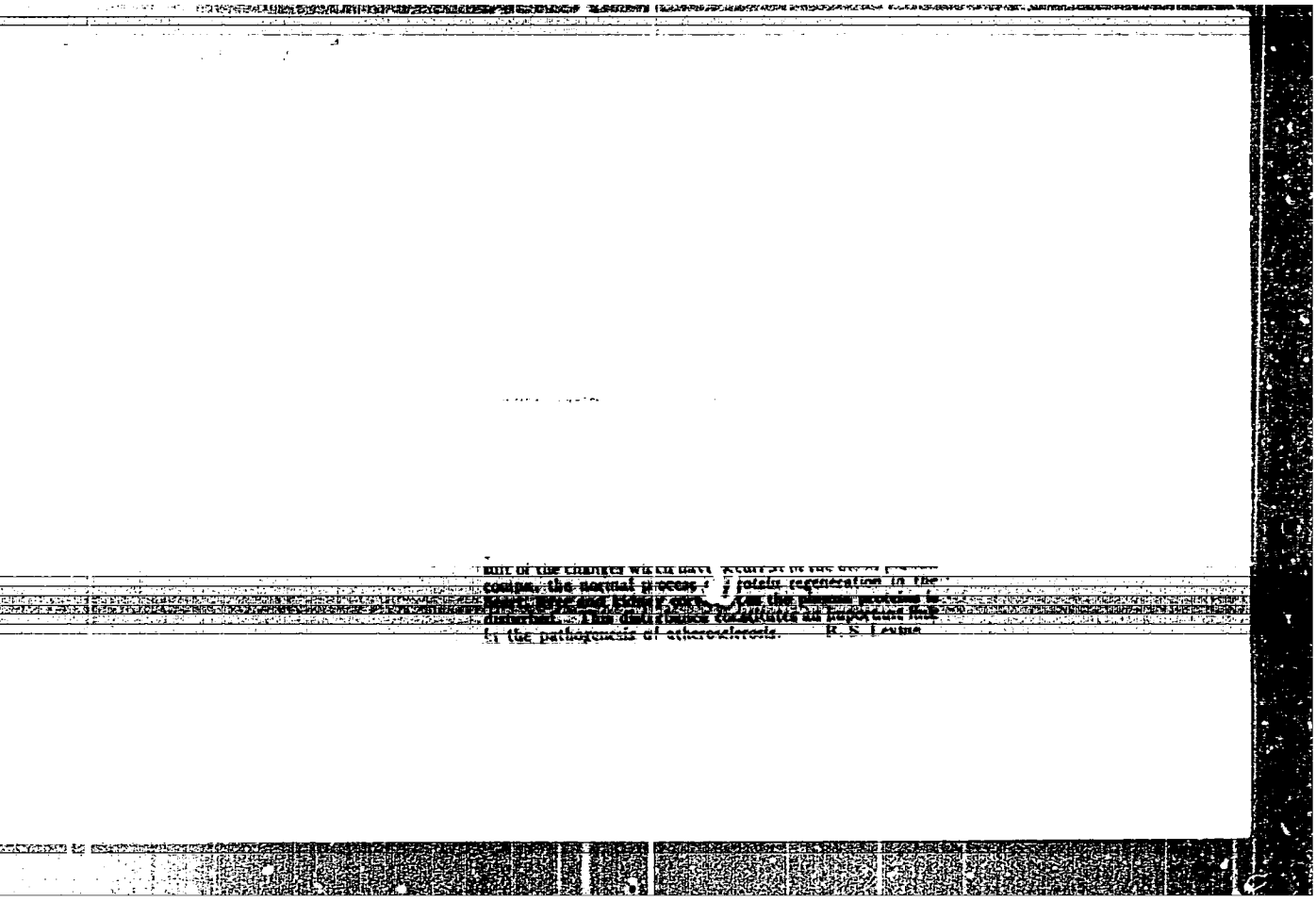
Studies on protein metabolism in experimental atherosclerosis; electrophoretic determination of protein fractions in experimental atherosclerosis. Doklady Akad. nauk SSSR 88 no. 2:313-316 11 Jan 1953. (CLML 24:1)

1. Presented by Academician N. N. Anichkov 4 November 1952. 2. Institute of Therapy of the Academy of Medical Sciences USSR.

KRITSMAN, M.G., professor; BAVINA, M.V., kandidat biologicheskikh nauk

Present-day data on the role of biochemical changes in the pathogenesis of atherosclerosis. Vop. pat. serd. sos. sist. 3 no.4:3-17 '54. (MLRA 7:11)
(ARTERIOSCLEROSIS)

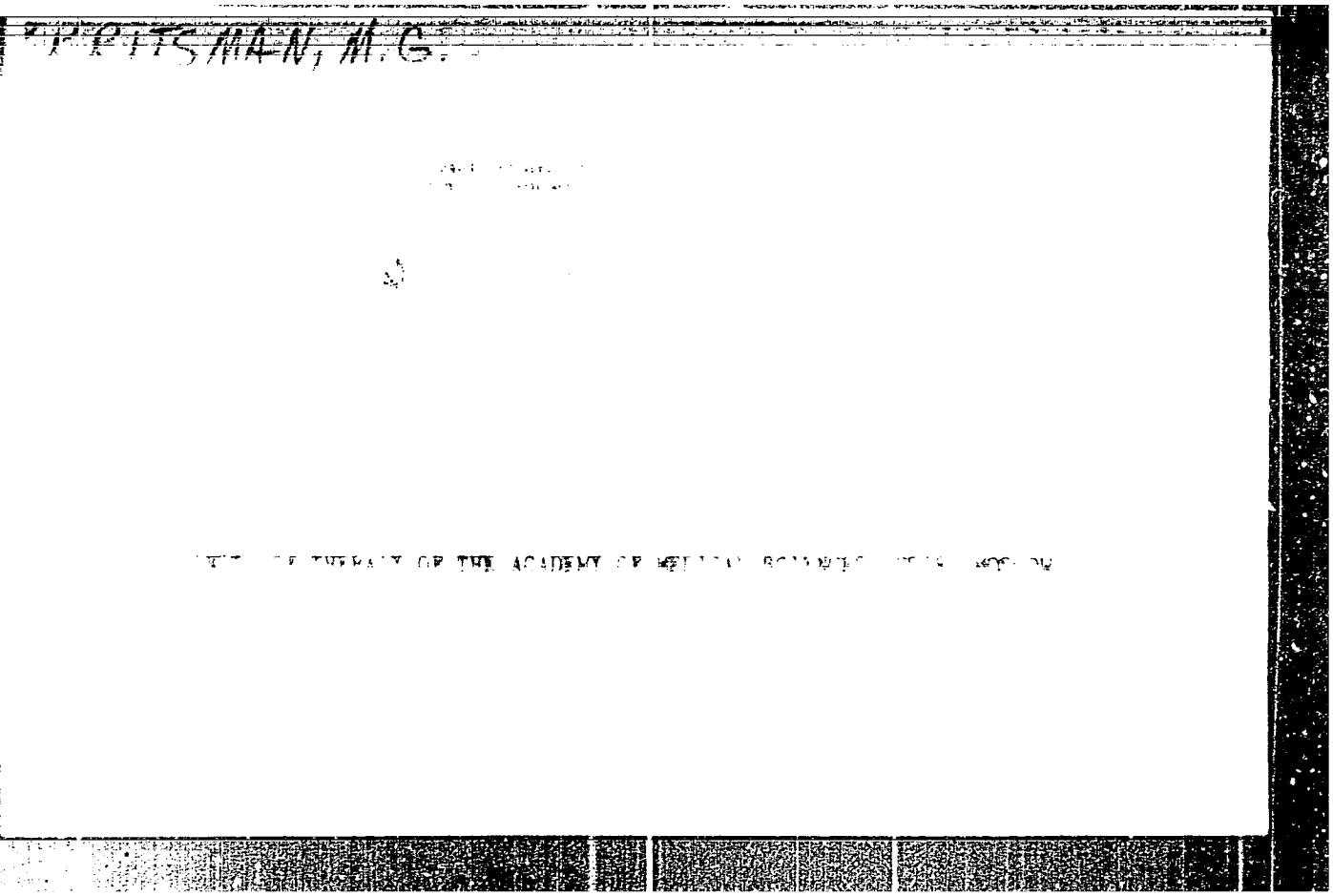
The incorporation of amino acids into individual proteins and protein complexes. A. E. Kovikova, M. G. Kitaman, and O. P. Samarina (A. V. Vishnevskii Inst. Surgery, Acad. Med. Sci. U.S.S.R., Moscow). *Biokhimiya* 19, 410–8 (1954).—Liver homogenates, blood serum, and blood plasma of the rat and rabbit as well as hemolymph of the oak silkworm were employed. In addn., deoxypentosenucleohistone, pentosenucleoprotein, and globulin isolated from the liver of the rat and rabbit were used. The incorporation expts. were of the *in vitro* type. The incorporation of glycine-C^{14} into a variety of isolated proteins can be clearly noted following 2 hrs. of incubation at 37°. This process of incorporation proceeds at a higher intensity in the case of isolated rabbit proteins. At 100° the incorporation of glycine-C^{14} into individual proteins or protein complexes proceeds rather intensely, but its rate remains lower in the case of protein complexes. At 100° the incorporation of glycine-C^{14} into deoxypentosenucleohistone isolated from the liver of the rat proceeds at a rate higher than in the case of the same protein isolated from the liver of the rabbit. Proteins suspended in a buffer soln. and subjected for 2 hrs. to 100° and then subjected to the interaction with labeled glycine at the same temp. acquire a lowered radioactivity. The effect of 100° upon the degree of amino acid incorporation by various proteins varies with the proteins. Enzyme inhibitors impede the process of amino acid incorporation into isolated proteins at 100° similarly as at 37°. The rate of inhibition varies. B. S. Levine

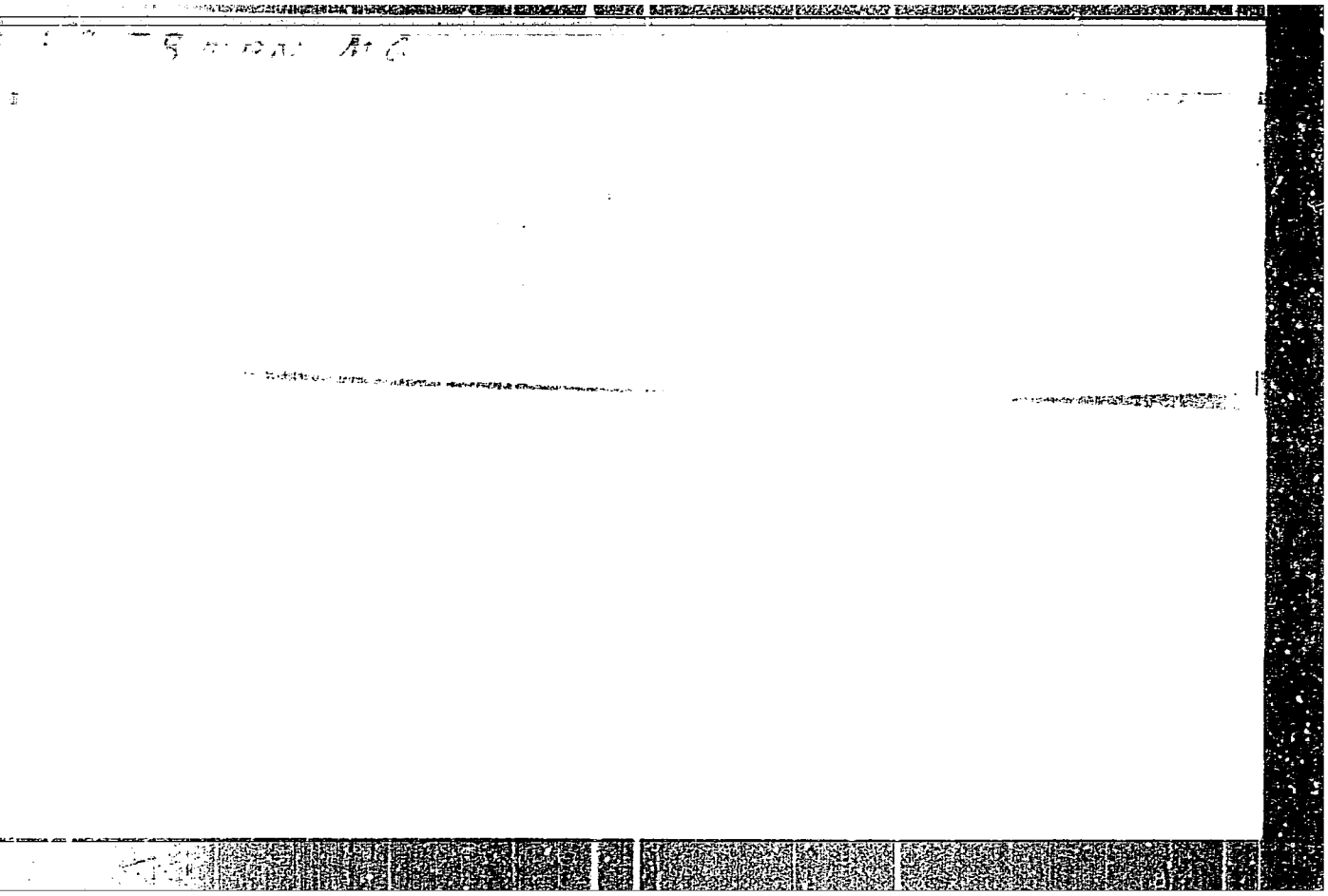


KRITSMAN, M.G.; BAVINA, M.V.

Using tagged amino acids in studying the intensity of protein formation in organs and tissues under normal conditions and during experimental atherosclerosis. Dokl.AN SSSR 94 no.4:721-724 F '54. (MLRA 7:2)

1. Institut terapii Akademii meditsinskikh nauk SSSR.
(Proteins) (Amino acids) (Radioisotopes)





KONIKOVA, A.S.; KRITSMAN, M.G.; SAMARINA, O.P.

Interaction between isolated proteins and their structural units. Dokl. AN SSSR 109 no.3:593-596 J1 '56. (MIRA 9:10)

1. Institut khirurgii imeni A.V. Vishnevskogo Akademii meditsinskikh nauk SSSR. Predstavleno akademikom L.S. Shtern.
(Proteins)

KRITSMAN, M. G., and KOMIKOVA, A. V.

"Experimental Demonstration of Metabolic Processes in Simple Proteins," a paper presented at the International Symposium on the Origin of Life on the Earth, Aug 57, Moscow.

In the article "Protein Synthesis," A. S. Konikova and M. G. Kritsman, Doctors of Biological Sciences, review and explain to some extent Soviet and foreign (chiefly US and British) research on protein synthesis. The authors preface their discussion of actual research with remarks emphasizing the complexity and importance of proteins, their natural formation and how it has been studied with tracer atoms, and their fate in the living organism. They mention the role of nucleic acids and conditions necessary for natural formation of proteins in various biological systems. They cite early experiments in this field and research paths leading to chemical synthesis.

The authors briefly discuss enzyme systems entering into the natural process and present certain principles involved in chemical synthesis, and mention possibilities for new vaccines afforded by discovery of the mechanism underlying the formation of immune bodies.

Konikova and Kritsman state that by attaching various polypeptides to a protein, basic proteins capable of generating antibodies with differing specificity can be synthesized, and they foresee the use of synthetic polypeptides for increasing the food value of protein products. (Nauka i Zhizn', Vol 24, No 1, Jan 57, pp 17-20)

Sum. 13 US

AUTHORS: Konikova, A. S., Sukhareva, B. S., Kritsman, M. G.

TITLE: On the Characteristic of the Stability of Bonds Formed by the Incorporation of Amino Acids Into Isolated Proteins (K kharakteristike sily svyazey, obrazuyushchikhsya pri vklyuchenii aminokislot v izolirovannyye belki)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 4, pp. 749-752 (USSR)

ABSTRACT: The course of the incorporation of free amino acids in isolated proteins and in proteins of complicated biological systems was compared in several biological systems. It was found that peptides and other bonds are formed (references 1 - 4). Furthermore the position of several marked amino acids introduced was found in the peptide chains of isolated proteins. More detailed investigations showed that the ϵ-amino group of the marked lysine takes part in the peptide bond of the latter. In the present paper those bonds were characterized which are formed by the incorporation of tyrosine-1-C^{14} and glycine-1-C^{14}

in isolated myosine. This was obtained by the determination of the radioactivity of protein during its imperfect hydrolysis. The condition was the following: If in the case of incorporation of the marked amino acid in isolated proteins other bonds are formed than in the case of its synthesis in the organism, the radioactivity loss during an imperfect hydrolysis of a protein marked in vitro will not correspond to the increase of the residual nitrogen. Furthermore it is necessary that the curve of the decrease(with respect to time) of its total radioactivity differs from that of the hydrolysis of the peptide bonds of an analogous albumen, however, marked in vivo. An experimental part follows in which the production methods of myosine with marking in vivo and in vitro are described. Rabbits were used for this purpose. Myosine was subjected to either alkaline or acid hydrolysis. Table 1 shows the quantitative changes of the non-protein-nitrogen, of tyrosine and of the radioactivity of myosine during its imperfect hydrolysis.

 The comparison between the bonds formed by the transition

On the Characteristic of the Stability of Bonds Formed By the Incorporation of Amino Acids into Isolated Proteins

20-119-4-33/60

of free tyrosine and glycine in isolated myosine and those formed by such a transition in the myosine of a whole organism showed that in the first case between these amino acids and the constituents of the protein molecules on the whole stable chemical bonds are formed which are not less stable than those formed in the second case. There are 1 figure, 3 tables, and 9 references, 3 of which are Soviet.

ASSOCIATION: Institut khirurgii im. A. V. Vishnevskogo Akademii meditsinskikh nauk SSSR (Institute of Surgery imeni A. V. Vishnevskiy of the Academy of Medical Sciences USSR) Institut terapii Akademii meditsinskikh nauk SSSR (Institute of Therapeutics of the Academy of Medical Sciences USSR)

PRESENTED: May 14, 1957, by L. S. Shtern, Member, Academy of Sciences, USSR

KONIKOVA, A.S.; KRITSMAN, M.G.; KOROTKINA, R.N.; SUKHAREVA, B.S.; POGOSOVA, A.V.

Comparative study on the type of bonds formed upon in vitro and in vivo incorporation of amino acids into proteins. Biokhimiia 24 no.5:794-798 S-O '59. (MIRA 13:2)

1. Institut khirurgii im. A.V. Vishnevskogo in Institut terapii Akademii meditsinskikh nauk SSSR, Moskva.
(PROTEINS chem.)

KRITSMAN, M.G.; KONIKOVA, A.S. (Moskva)

Protein synthesis outside the organism in the light of investigations made by the use of radioactive tracers. Usp.sovr.biol. 48 no.2:136-154 S-O '59. (MIRA 13:3)
(PROTEINS chem.)

KRITSMAN, M.G.; SUKHAREVA, B.S.; KONIKOVA, A.S.; KOROTKINA, R.N.

Changes in the number of peptide bonds in isolated proteins.
Biokhimiia 25 no.1:17-23 Ja-F '60. (MIRA 13:6)

1. Institute of Therapy and Surgical Institute, Academy of Medical Sciences of the U.S.S.R., Moscow.
(MUSCLE PROTEINS chem.)

KOROTKINA, R.N.; KONIKOVA, A.S.; KRITSMAN, M.G.

Simple method for obtaining blood serum albumin tagged with radioactive amino acids. Lab. delo 6 no.4:18-20 Jl-Ag '60.
(MIRA 13:12)

1. Institut khirurgii AMN SSSR imeni A.V. Vishnevskogo (dir. - deystvitel'nyy chlen AMN SSSR prof. A.A.Vishnevskiy) i Institut terapii AMN SSSR, Moskva.

(ALBUMIN) (RADIOACTIVE TRACERS)

KRITSMAN, M. G., SHEMYAKINA, F. S., LAVITOVA, [illegible]

"Incorporation of Free Amino-Acids into Crystalline Insulin, and the Role of Protein Structure in this Process."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

LEVITOVA, Ye.N.; KONIKOVA, A.B.; KRITSMAN, M.G.

Inclusion of labeled amino acids into plasteins. Biokhimiia 26 no.6:961-965 N-D '61. (MIRA 15:6)

1. Vishnevskiy Institute of Surgery and Institute of Therapy, Academy of Medical Sciences of the U.S.S.R., Moscow.
(AMINO ACIDS)
(PLASTEIN)

S/020/61/141/002/025/027
B101/B110

27.1100

AUTHORS: Babskaya, Yu. Ye., Konikova, A. S., and Kritsman, M. G.

TITLE: Study of bonds formed as a result of the inclusion of amino acids into the proteins of a living organism

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 2, 1961, 473-476

TEXT: The authors refer to literature data according to which the bonds of amino acids with other constituents of the protein molecule may be dissimilar and may possess different stability. They checked this assumption by examining bonds formed in vivo as a result of introducing methionine-S^{35} and cysteine-S^{35} into liver protein and into the protein fractions of blood. The experimental method has already been described (DAN, 137; 710 (1961)). The proteins obtained were purified and then treated with alkali, performic acid, and thioglycolic acid. The amount of amino acid included into the protein with formation of a stable bond was estimated from the residual radioactivity remaining after this treatment. Fig. 1 presents data obtained for methionine-S^{35} two hours after its introduction

Card 1/4

Study of bonds formed as a result ... S/020/61/141/002/025/027
B101/B110

into the organism. In contradistinction to the liver which, preponderantly, firmly bound the methionine, the blood proteins showed a partially unstable addition of methionine. H. Tarver's assumption (see below) that unstable bonds are the result of a conversion of methionine into cysteine and addition of the latter by the formation of disulfide bonds was refuted by the fact that analogous to methionine-S^{35} marked methionine-C^{14} was used in the carboxyl group. Methionine-S^{35} and methionine-C^{14} showed the same behavior. Accordingly, besides disulfide bonds still other unstable bonds occur. While the bond between the liver and cysteine is mainly stable, preponderantly unstable bonding (up to 80-90%) occurs, similar to methionine, between blood proteins and cysteine. Examinations showed that unstably bound cysteine tended to decrease in the course of time after it had been introduced into the organism. 64 hours after introduction, however, 25% of cysteine-S^{35} was still unstably bound. This leads to the conclusion that proteins always contain both stable and unstable cysteine molecules, the ratio of stably to unstably bound radicals depending on the period of time for which the amino acid was subjected to metabolism. In

Card 2/

addition, the ratio also depends on the physiological condition of the organism. The introduction of cysteine-S^{35} into a rabbit in hypothermic condition (24°C) showed that merely 6% of cysteine was still stably bound. The ratio of stable to unstable bonds is, therefore, not constant but depends on the time of inclusion of the amino acid into the organism, on the kind of protein and on the organism's functional condition. There are 4 figures and 11 references: 4 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: H. Tarver, C. L. A. Schmidt, J. Biol. Chem., 146, 69 (1942); T. Winnick, E. A. Peterson, D. M. Greenberg, Arch. Biochem., 21, 235 (1949); E. A. Peterson, G. M. Greenberg, J. Biol. Chem., 194, 359 (1952); H. Borsook, Chemical Pathways of Metabol., 2, 1954, p. 173.

ASSOCIATION: Institut khirurgii im. A. V. Vishnevskogo Akademii meditsinskikh nauk SSSR (Institute of Surgery imeni A. V. Vishnevskiy of the Academy of Medical Sciences USSR)

PRESENTED: June 19, 1961, by V. N. Chernigovskiy, Academician

KRITSMAN, M.G.; ALEKSEEVA, A.S.

Changes in the activity of some enzyme systems of the tricarboxylic acid cycle in the course of experimental atherosclerosis. Cor Vasa 4 no.1:26-31 '62.

1. Institute of Therapy, Academy of Medical Sciences, Moscow.
(ARTERIOSCLEROSIS-metabolism) (TISSUE METABOLISM)

POGOSOVA, A.V.; KRITSMAN, M.G.; KONIKOVA, A.S.

Effect of urea and temperature on the process of inclusion of amino acids into isolated proteins. Biokhimiia 27 no.1:19-24 Ja-F '62. (MIRA 15:5)

1. Institute of Therapy and Institute of Surgery, Academy of Medical Sciences of the U.S.S.R., Moscow.

(PROTEINS) (UREA) (TEMPERATURE)

BABSKAYA, Yu.Ye.; KONIKOVA, A.S.; KRITSMAN, M.G.; POGOSOVA, A.V.; RAPOPORT, E.A.

Problems of the synthesis of specific proteins. Dokl. AN SSSR 146 no.2:460-463 S '62. (MIRA 15:9)

1. Institut khirurgii im. A.V. Vishnevskogo AMN SSSR i Institut terapii AMN SSSR. Predstavleno akademikom V.N. Chernigovskim. (PROTEINS)

LEVITOVA, E.N.; KRITSMAN, M.G.

The rate of serum lipoprotein synthesis and breakdown in normal rabbits and during experimental atherosclerosis. Cor vasa 5 no.4:282-287 '63.

1. Institute of Therapy, Academy of Medical Sciences, Moscow.
(LIPOPROTEINS) (ARTERIOSCLEROSIS)
(BLOOD LIPIDS) (LIPID METABOLISM)
(METHIONINE) (CYSTEINE)
(SULFUR ISOTOPES)

KONIKOVA, A.S.; KRITSMAN, M.G. (Moskva)

Some data on the mechanism of protein synthesis obtained by the utilization of amino acid analogues. Usp. sovr. biol. 55 no.3:339-354 My-Je '64 (MIRA 17:3)

KONIKOVA, Anna Semenovna; KRITSMAN, Mariya Grigor'yevna;
SHREYBERG, G.A., red.

[Pathways of protein synthesis] Puti sinteza belka. Moskva, Meditsina, 1965. 357 p. (MIRA 18:6)

[redacted], M.G.

Biosynthesis of insulin chains A and B. Ukr. [redacted]:503-506 Jl '65. (MIRA 18:7)

1. Institut khirurgii im. A.V.Vishnevskogo AMN SSSR i Institut fiziologii AMN SSSR. Submitted October 24, 1964.

[illegible], [illegible]; [illegible], [illegible], [illegible], [illegible]

Incorporation of C[illegible] [illegible] into [illegible] of resting and growing liver. Biokhimiia [illegible] '65. (MIRA 18:10)

1. Institut khirurgii imeni A.V. [illegible] [illegible] tsinskikh nauk SSSR, Moskva.

SENKEVICH, V.F.; MINTS, R.I.; KRITSSHTEYN, L.A.; KUROCHKINA, A.N.

Constitution and properties of certain structural steels hardened in molten alkalies. Trudy Ural. politekh. inst. no.68:88-104 '58.
(MIRA 12:7)
(Steel--Hardening) (Steel, Structural--Testing)
(Metallography)

KRITSUK, A.A. Cand Tech Sci -- (diss) "~~The~~ Effect of ~~the~~ duration of slope of fibers upon ~~the continuous~~ resistance of pine wood pulp under compression ~~in reduction~~." Kiev, 1957. 12 pp with ~~diagrams~~ graphs 20 cm.

(Acad Sci UkSSR. Inst of Construction ~~Engineering~~ Mechanics).

(KL, 23-57, 112)

KRITSUK, A.A.

124-1957-10-12302 D

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 10, p 151 (USSR)

AUTHOR: Kritsuk, A. A.

TITLE: The Effect of the Inclination of the Fibers on the Prolonged Resistance of Pine Wood Subjected to Compression (Vliyaniye naklona volokon na dlitel'nuyu soprotivlyayemost' drevesiny sosny pri szhatii)

ABSTRACT: Bibliographic entry of the Author's dissertation for the degree of Candidate of Technical Sciences, presented to the In-t stroit. mekh. AN USSR (Institute of Structural Mechanics, UkSSR Academy of Sciences), Kiyev, 1957.

ASSOCIATION: In-t stroit. mekh. AN USSR (Institute of Structural Mechanics, UkSSR Academy of Sciences), Kiyev.

Card 1/1

KRITSUK, A.A. (Kiiv)

Experimental study of transitory and continuous strength of moist wood taking the inclination of the fibers into consideration [with summary in English]. Prykl. mekh. 3 no.1: 93-100 '57. (MLRA 10:5)

1. Institut budivel'noi mekhaniki AN URSR.
(Wood--Testing)

KRITSUK, A.A. [Krytsuk, A.A.]

Long- and short-term strength of DSP-B laminated wood under compression at an angle to the veneer fibers. Dop.AN URSR no.4: 445-450 '60. (MIRA 13:7)

1. Institut mekhaniki AN USSR. Predstavleno akademikom AN USSR F.P.Belyankinym [F.P.Bieliankinym].
(Plywood)

KRITSUK, A A

S/021/60/000/008/006/011
D210/D305

AUTHOR: Krytsuk, A.A.

TITLE: Effect of the temperature on the strength limit of АСП (DSP) plastics during compression in different directions to the axis of anisotropy

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 8, 1960, 1035 - 1038

TEXT: The author studied 3 types of plastics ДСП-Б (DSP-B), and ДСП-Г (DSP-H). They consist of thin layers of wood, soaked in synthetic pitch (phenol-formaldehyde) and glued together under high temperature and pressure. In DSP-B for any 10-20 layers with parallel direction of the fiber, one layer has the fiber direction perpendicular to the neighboring layers. In ДСП-В (DSP-V) any two neighboring layers have perpendicular fiber directions, in DSP-H fiber directions in the neighboring layer are turned by 25°-30°. The samples used had dimensions of 12 x 12 x 18 mm and were

Card 1/3

tested on a 30-ton "Baldwin" machine with fixed loading velocity of 3000 kg/min. The temperatures used were 20, 100, 150°C. At a temperature of 200C the strength of DSP-B plastic sharply differs during the compression in different directions, when for the plastic DSP-V it changes less. The strength limit of these two plastics at 200C were expressed by formulae:

a) for DSP-B $$\sigma_m^\alpha = \frac{\sigma_m^0}{1 + \left(\frac{\sigma_m^0}{\sigma_m^{90}} - 1\right) \sin^{1.6}\alpha}$$, and

b) for DSP-V $$\sigma_m^\alpha = \frac{\sigma_m^0}{1 + \left(\frac{\sigma_m^0}{\sigma_m^{90}} - 1\right) \sin^3 2\alpha}$$, where σ_m^α - the

Effect of the temperature on ...

strength limit for any angle of inclination of fiber, and σ_m^0 the strength limit along the fiber. At 100°C the plastic strength decreases considerably, at most to a half and at 150°C - to a third of the strength it has at 20°C. There are 1 figure, 1 table and 3 Soviet-bloc references.

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