

takt der intrazellulären Peptidasen mit dem Substrat ermöglicht. Schwer erklärbar sind verschiedenartige Veränderungen in der Aktivität der zellfreien Enzympräparate, die nach dem Einfrieren zum Teil unverändert blieb, meist aber verstärkt, oft aber auch abgeschwächt sein konnte. Wir vermuten, dass es in Abhängigkeit von Versuchsbedingungen und dem Zustand des Bakterienmaterials entweder zu kryolytischen Prozessen oder zur Kälte-denaturierung des kolloidalen Trägers gekommen ist. Im ersten Fall könnte eine erhöhte Besetzung der adsorbierenden Enzymoberfläche mit Substratmolekülen ermöglicht worden sein, was sich dann auf die Enzymkinetik positiv auswirken müsste. Im zweiten Fall wäre der Erfolg ein negativer.

Es wurden nur solche Ergebnisse besprochen, bei denen keine qualitativen Unterschiede bzw. spezifische Erscheinungen an einzelnen Substraten auftraten. Es bleibt noch zu bemerken, dass im allgemeinen die Dipeptide intensiver gespalten wurden als die Tripeptide.

Amino Acids in the Endosperms of *Palmae* in Amazon

In the Amazonas, there are numerous *Palmae* plants which belong to a great many species. But they have scarcely been taken up as objects of scientific study until now.

As the foundation for the plant physiological or biochemical research and the utilization of these rich resources in the Amazonas, the amino acid composition of the endosperms of eleven species of *Palmae* was determined by the method of paper chromatography.

Materials were selected from the common species of *Palmae* in the Amazonas, so as to contain as many genera as possible, and to compare them: they are *Acrocomia sclerocarpa* Mart. (Mucajá or Macaúba), *Asrocaryum tucum Mart.* (Tucumã), *Cocos nucifera* L. (Côco), *Elaeis guineensis* L. (Dendê), *Euterpe oleracea* Mart. (Açaí), *Guiljelma speciosa* Mart. (Pupunha), *Jessenia bataua* Burret. (Patauá), *Mauritia flexuosa* L. f. (Miriti or Muriti or Buriti), *Oenocarpus bacaba* Mart. (Bacaba), *Orbignia martiniana* Barb. (Babaçu) and *Scheelea martiana* Burret. (Urucuri or Jaú).

The acid hydrolyzates of the materials were chromatographed and the main acids were detected with ninhydrin reaction and identified on two-dimensional chromatogram developed with *n*-butanol-acetic acid-water (250:60:250)¹ and 80% phenol by the chromatographical comparison with authentic samples that are 0.01M solutions of amino acids in 10% isopropanol.

When one of the spots on the two-dimensional chromatogram corresponded to two or more authentic samples, a method of elution of spot was utilized and eluates were rechromatographed with other solvents.

These experiments were made under tropical conditions at 27–36°C.

26 substances were detected in all and seven of them could not be identified, i.e. spot 1 (Rf 0.20, 0.82), spot 2 (Rf 0.09, 0.21), spot 3 (0.90, 0.78), spot 4 (Rf 0.38, 0.97), spot 5 (Rf 0.43, 0.22), spot 6 (Rf 0.36, 0.12), and spot 7 (Rf 0.46, 0.00). The former Rf of every spot corresponds to *n*-butanol-acetic acid-water, the latter to 80% phenol on Whatman No. 1 filter paper.

Aspartic acid, glutamic acid, α -alanine, arginine, valine, leucine, isoleucine, serine, lysine, glycine, methionine, hydroxy proline and unknown spot 1 were found in the

Unser Bericht will vor allem auf einige der komplexen Probleme hinweisen, denen wir bei unseren Studien über Kältewirkung auf Mikroorganismen und deren Enzyme begegnet sind⁶. Ausführlichere Angaben über Methodik und gemessene Werte fortgesetzter Versuche folgen an anderer Stelle¹⁻⁶.

Summary. The effect of freezing on the peptidase activities of some bacteria and their cell-free enzyme preparations has been studied. Significant differences were found in the activity of peptidase and in their temperature coefficient.

J. ARPAI

Mikrobiologische Abteilung der Forschungsanstalt für Gefriertechnik, Bratislava (Tschechoslowakei), 16. September 1960.

⁶ J. ARPAI, *Biologia* 15, 461 (1960).

endosperms of all species of *Palmae* examined and the first four amino acids were contained in the largest quantity. Unknown spot 1 was detected as a trace in all species.

Proline and threonine were also found in all species examined except Patauá. Methionine sulfoxide, methionine sulfone, α -amino butyric acid, γ -amino butyric acid were detected as trace in about all of the species examined.

Cystine was also detected as a trace in Mucajá, Dendê, and Bacaba.

Unknown spot 2 was found in the most species except Côco, Pupunha, and Urucuri. The unknown substance 3 has a high Rf value and shows a yellowish round spot on a chromatogram developed with *n*-butanol-acetic acid-water. But, on two-dimensional chromatograms, it could not be detected and the eluates of spot 3 from one-dimensional chromatograms developed with *n*-butanol-acetic acid-water show long indistinct spots on chromatograms developed with 80% phenol. The substance was found in a considerable quantity in many species (Tucumã, Patauá, Buriti, Bacaba, and Babaçu). Unknown spot 4 was detected in Tucumã, and in Côco and Urucuri as a trace. Unknown spot 5 and 6 were detected as traces only in Babaçu and unknown spot 7 in Tucumã.

The details of this work will be published soon in Brazil.

Résumé. La composition amino-acide des Endospermes de 11 espèces de Palmacées de l'Amazonie ont été étudiées en utilisant la méthode de la chromatographie sur papier. Des 26 substances découvertes 19 furent identifiées, 7 restèrent inconnues. L'étude détaillée paraîtra prochainement au Brésil.

KIMIYO TAKEUCHI²

Instituto Nacional de Pesquisas da Amazônia, Manaus (Amazonas, Brazil), November 15, 1960.

¹ A. J. WOJWOOD, in R. J. BLOCK, E. L. DURRUM, and G. ZWEIG, *A Manual of Paper Chromatography and Paper Electrophoresis* (Academic Press, Inc., New York 1955), p. 78.

² The author wishes to express her gratitude to the Institute which gave her an opportunity to do this work in Amazona far from Tokyo (Biological Institute, The College of general Education, University of Tokyo).