BIBLIOGRAFIA LATINOAMERICANA

ARGENTINA

Allosteric transitions and membrane-sound ATPase from rat tissues: the effect of fat deprivation on the allosteric inhibition by fluoride.— Adriana L. Goldemberg, Ricardo N. Farias and Raúl E. Trucco (Depto. de Química Biológica, Lab. de Microbiología, Facultad de Ciencias Químicas, Universidad Nacional de Córdoba, Córdoba, Argentina). Biochim. Biophys. Acta, 291: 489-493, 1973.

In rats fed a fat-sufficient diet, ATPases (ATP phosphohydrolase, EC 3.6.1.3) from heart, kidney and brain microsomes showed allosteric kinetics for the inhibition by F^-, with values of $n = 2.0$. In rats fed a fat-free diet, the values of n for the ATPases changed from 2.0 to 1.0 in heart and kidney microsomes. When these animals were then fed a fat-sufficient diet the values of n reached the control values. In brain microsomal ATPases no modification of the values of n was found between both groups of animals. The regulatory properties of the membrane bound ATPases are discussed. 18 Ref.

Membrane lipid fatty acids and regulation of membrane-bound enzymes. Allosteric behavior of erythrocyte Mg^{2+}-ATPase, (Na^+-K^+)-ATPase and acetylcholinesterase from rats fed different fat-supplemented diets.— Bernabé Bloj, Roberto D. Morero, Ricardo N. Farias and Raúl E. Trucco (Instituto de Química Biológica, Facultad de Bioquímica, Química y Farmacia, Universidad Nacional de Tucumán, Tucumán, Argentina and Laboratorio de Microbiología Industrial, Depto. de Tecnología Farmacéutica, Facultad de Farmacia y Bioquímica, Universidad Nacional de Buenos Aires). Biochim. Biophys. Acta, 311: 67-79, 1973.

Studies were carried out to

determine the Hill coefficients for the inhibition by F^- of the erythrocyte membrane-bound Mg^{2+}-ATPase ($Na^+ + K^+$)-ATPase and acetylcholinesterase from rats fed different natural fats or oil supplements, one with a hydrogenated fat supplement and the other with a fat-free diet. The responses of the red cell fatty acids to dietary fats were recorded. The values of *n* for the inhibition by F^- of the three enzymes revealed a particular and different behavior in each group. Correlation between the fatty acid composition of erythrocyte membranes and cooperativity of each enzyme were calculated. The results indicate that neither the essential fatty acid family nor the non-essential ones are particulary involved in the allosteric phenomena. The increase of the double bond index/saturation ratio of fatty acids, which is taken as indicative of membrane fluidity, was accompanied in an inverse manner by changes in allosteric transitions of the ($Na^+ + K^+$) —ATPase and acetylcholinesterase, whereas the Mg^{2+} —ATPase was not dependent on this ratio. Diminution of membrane fluidity, carried out by *in vitro* increase of its cholesterol content, yields confirmatory results of this regulatory mechanism since the value of *n* for acetylcholinesterase shifted as predicted. These facts indicate that the membrane fluidity is a physiological regulator for the allosteric behavior of the membrane-bound enzymes and that each enzyme exhibits a particular behavior in this phenomenon. 48 Ref.

Membrane fluidity, cholesterol and allosteric transitions of membrane-bound Mg^{2+}-ATPase, ($Na^+ + K^+$)-ATPase and acetylcholinesterase from rat erythrocytes.— Bernabé Bloj, Roberto D. Morero and Ricardo N. Farias (Instituto de Química Biológica, Facultad de Bioquímica, Química y Farmacia, Universidad Nacional de Tucumán, Argentina). FEBS Letters, 38(1): 101-105, 1973.

Modifications in the fluidity of the lipid phase of mammalian membranes are obtained by changes in its fatty acid composition or cholesterol content. These facts prompted investigations about the mechanism of action of cholesterol on the allosteric behavior of animal membrane-bound enzymes. Several experiences were carried out as described in this paper, to test the cholesterol action on the kinetic parameters of the three membrane-bound enzymes under *in vivo* physiological conditions. 31 Ref.

Effect of essential fatty acid deficiency on the Arrhenius plot of acetylcholinesterase from rat erythrocytes.— Bernabé Bloj, Roberto D. Morero and Ricardo N. Farias (Instituto de Química

Biológica, Facultad de Bioquímica, Química y Farmacia, Universidad Nacional de Tucumán, Argentina). J. Nutr., 104: 1265-1272, 1974.

Arrhenius plot of erythrocyte acetylcholinesterase was studied at different pH values in four groups of rats. Two groups were fed EFA-sufficient diets with lard or corn oil as the dietary fat. The other two groups were fed EFA-deficient diets: a basic, fat-free diet, and the same supplemented with hydrogenated beef fat. The Arrhenius plot of membrane-bound acetylcholinesterase from EFA-sufficient animals was found to have a breakpoint about 20° at pH 8.0, with lower activation energy at higher temperatures. The enzyme from EFA-deficient animals exhibited a breakpoint about 28°, the activation energies being lower than that of the enzyme from EFA-sufficient animals above and below this point. Solubilization of the membrane with Triton X-100 led to a shift in the breakpoint and to an increase in the activation energies in the enzyme from EFA-deficient animals. No changes were detected with preparations from EFA-sufficient animals after the treatment. After reconstitution of membrane-like material from the soluble EFA-deficient preparation, the distinctive enzymatic behavior was restored. The results indicate that the Arrhenius plot of the acetylcholinesterase is changed when the enzyme is bound to an EFA-deficient membrane. 25 Ref.

Kinetic changes of the erythrocyte (Mg^{2+} + Ca^{2+})-adenosine triphosphatase of rats fed different fat-supplemented diets.— Mercedes G. Galo, Bernabé Bloj and Ricardo N. Farias (Instituto de Química Biológica, Facultad de Bioquímica, Química y Farmacia, Universidad Nacional de Tucumán, Argentina). J. Biol. Chem., 250: 6204-6207, 1975.

The activation by Mg^{2+}, in the presence of 0.2 mM Ca^{2+}, of the erythrocyte ATPase from rats fed with six different fat-supplemented diets has been studied. A sigmoid kinetic curve was found. The values of the Hill coefficient showed a positive correlation with the membrane fatty acid fluidity, which is expressed as the ratio between double bound index and saturated fatty acid content. The values of the Hill coefficient ranged from 1.0, in animals fed the lard-supplemented diet. When the effect of increasing Ca^{2+} concentration in these two groups was studied at pH 8.1, an activation with the latter group and an inhibition with the former one were found. The activation by Ca^{2+} found in corn oil-fed animals was lost after treatment with phospholipase C and restored after the addition of homologous

phospholipids. The activation could not be restored by addition of phospholipids from lard-fed animals. In this group, treatment with phospholipase C left the kinetic behavior unmodified, but an activation by Ca^{2+} could be detected after adding phospholipids from corn oil-fed animals. It is suggested that membrane fatty acid fluidity is involved in the cooperative transitions and cryptic activity of the $(Mg^{2+} + Ca^{2+})$–ATPase. 31 Ref.

Regulation of allosteric membrane-bound enzymes through changes in membrane lipid composition.— Ricardo N. Farias, Bernabé Bloj, Roberto D. Morero, Faustino Siñeriz and Raúl E. Trucco (Instituto de Química Biológica, Facultad de Bioquímica, Química y Farmacia, Universidad Nacional de Tucumán, and Laboratorio de Microbiología Industrial, Departamento de Tecnología Farmacéutica, Facultad de Farmacia y Bioquímica, Universidad Nacional de Buenos Aires, Argentina). Biochim. Biophys. Acta, 415: 231-251, 1975. Biomembrane Reviews.

CONTENIDO

I. Introduction.

II. Effect of Fat-Free Diet on Cooperativity of Membrane-Bound Enzymes.

III. Relationship Between Membrane Lipid Fluidity and Enzyme Cooperativity.

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Protein utilization in undernourished infants: effects of energy intake and protein:

energy ratio.— María C. Morasso, Sonia D'Andrea, María T. Ovando (Metabolic Unit, Nutritional Science Institute of Northwestern Argentina (INNOA), Salta, Argentina) and M. Esther Río, Sara J. Closa and Carol Meredith (Dept. of Nutrition and Food Science, School of Pharmacy and Biochemistry, University of Buenos Aires, Argentina). Nutr. Reps. Internat., 20: 353-361, 1979.

The energy intake and protein: energy ratio required for large protein retention and maximum protein utilization was evaluated studying throughout rehabilitation a group of seventeen undernourished infants from the northwestern region of Argentina. Thirty-four nitrogen balance studies were carried out. During the balance studies protein intake ranged from 0.70 to 7.55 g/kg/d; energy intake from 96 to 196 Kcal/kg/d and protein: energy ratio (P%) from 6.6 to 17.5. Nitrogen retention showed a tendency towards greater values for increasing calories; the data following along three different curves according to the P% averaged 7.9, 11.0 or 15.1. At equal energy intakes nitrogen balance improved as P% increased. The effects of energy intake and nitrogen intake were analyzed simultaneously, according to a two variable function that demonstrated improved utilization by increasing energy intake or by increasing protein concentration. As energy intake increased the improvement in utilization determined by large P% becomes more apparent. Conversely, utilization improves as P% increased only when energy intake was greater than 110 Kcal/kg/d. Our results show that an increase in dietary protein concentration improves protein retention and protein utilization more efficiently than an increase in energy intake. 21 Ref.

BRASIL

Effect of maternal protein undernutrition on growth and development of the rat brain progeny.— Tasso Moraes e Santos (Depto. de Bioquímica e Immunología, Instituto de Ciencias Biológicas, UFMG, Belo Horizonte, MG Brasil). Nutr. Reps. Internat., 20:215-223, 1979.

The effect of maternal undernutrition on the rat offspring was assessed by evaluating the cerebral composition in macromolecules from birth to weaning. Protein undernutrition was imposed to the mothers two weeks before breeding. The body and brain weights of the undernourished pups were, respectively, 46% and 88% of the controls. The adverse effect of undernutrition on cerebral cell

number (DNA content) was observed after 5 days of postnatal life. Also, after 5 days of age RNA and protein contents were decreased in undernourished animals. No adverse effect on cell size (protein/DNA ratio) up to 21 days of age could be detected in response to the imposed nutritional stress. Protein synthetic capacity of the cell (RNA /DNA ratio), however, was lower after 11 days of age in undernourished pups. 19 Ref.

COLOMBIA

Consideraciones técnicas acerca de los molinos de caña para panela en Colombia.— Marco Arturo Muñoz Cely (El artículo que aquí se cita es una síntesis de las conclusiones del "Diagnóstico y Evaluación Técnica de los Molinos de Caña para Panela" realizado por el Instituto de Investigaciones Tecnológicas (ITT) con el patrocinio de "COLCIENCIAS". Tecnología, 21(119) 7-46, 1979.

El trabajo está destinado al análisis y evaluación técnica del proceso de molienda de caña para panela y en forma más específica a los molinos o trapiches de accionamiento mecánico que operan en el país.

Se fundamenta en un trabajo de campo realizado en las principales zonas paneleras del país, donde se evaluó más de medio centenar de trapiches de diferentes tipos, en relaciones teórico-empíricas existentes para estos equipos y en principios básicos de mecánica, resistencia de materiales, diseño de máquinas y procesos de fabricación.

La elevada inversión ociosa creada por el gran número de trapiches que sólo operan algunos días del año, la falta de avance técnico de la maquinaria, mejor aún, su retroceso en algunos aspectos como calidad de materiales y mecanizado, el poco conocimiento del campesino y aun del fabricante, de las mejores condiciones de instalación, operación y mantenimiento del molino, el desconocimiento de la capacidad real y la potencia necesaria y la poca atención prestada al mejoramiento del diseño, son, resumidas, las conclusiones principales del estudio. 4 Ref.

Productos alimenticios derivados de ajonjolí. Descascarado de la semilla y producción de harina desengrasada y líquido proteínico.— Gloria Silva S. y Hernando Riveros S. (Instituto de Investigaciones Tecnológicas, Bogotá, Colombia). Tecnología, 21(120): 34-55, 1979.

El presente trabajo comprendió el estudio de las posibilidades del uso de la semilla de ajonjolí en alimentación humana, de especial interés dado el alto contenido de aminoácidos azufrados de su proteína.

El principal obstáculo para la

elaboración de productos destinados a consumo humano, a partir de la semilla, radica en la presencia de colores y sabores objetables ocasionados por los componentes presentes en la cascarilla, razón por la cual, en primera instancia, se desarrolló un proceso de descascarado. Este consiste en someter la semilla a un tratamiento alcalino y luego se pasa a través de una despulpadora para frutas en donde se remueve la cascarilla. La semilla descascarada es posteriormente lavada y secada.

A partir de la semilla descascarada se elaboraron harina de ajonjolí desengrasada y un producto líquido que puede servir como base para bebidas ricas en proteína.

Desde el punto de vista técnico, la harina tiene buenas perspectivas de utilización en casi todos los productos enriquecidos a los cuales se adiciona actualmente harina de soya. Su costo hace que la producción no sea atractiva si se compara con los precios de venta de la harina de soya; sin embargo, de aumentarse en un 10% el rendimiento en el proceso de descascarado, se disminuiría el costo en forma tal que su precio sería competitivo en el mercado.

La bebida tiene propiedades de color y sabor muy aceptables, pero presenta problemas de estabilidad ocasionados por la baja solubilidad de la proteína de ajonjolí. De solucionarse este inconveniente, la bebida podría utilizarse en mezclas con soya, lo que daría como resultado un producto de composición balanceada y con buena calidad de proteína. Desde el punto de vista económico, la elaboración del líquido no presenta mayores atractivos dado que su alto costo de producción lo coloca en situación desventajosa frente a la bebida de soya y a la leche. 27 Ref.

Aplicación de texturizados de soya y de algodón en preparaciones alimenticias populares.— Carolina Gutiérrez L. (Trabajo realizado en el Instituto de Investigaciones Tecnológicas con el patrocinio de la Organización de Estados Americanos —OEA— dentro del Programa Multinacional de Tecnología de Alimentos). Tecnología, 21(117): 8-39, 1979.

El objetivo principal de este trabajo fue contribuir a mejorar el estado de nutrición de la población y prevenir la malnutrición, logrando el consumo de más proteínas sin afectar los gustos alimentarios tradicionales.

Con este propósito se estudió la aplicación de texturizados de soya y de algodón en recetas populares conservando sus características organolépticas y utilizando métodos sencillos de preparación. 9 Ref.

VENEZUELA

Alimentos de alto valor

proteínico: consideraciones sobre su producción, desarrollo y disponibilidad.— José Félix Chávez (Facultad de Farmacia, Universidad Central de Venezuela). Trabajo presentado en el XIII Congreso Latinoamericano de Química, Lima, Perú, octubre de 1978. Rev. Fac. Farmacia, (Caracas), No. 43, 1979. 61 Ref.

Investigación de unas leguminosas muy frecuentemente consumidas en Venezuela y Colombia.— Wilhelm Reiners (Instituto de Farmacia y Bromatología, Universidad de Wuerzburgo, Alemania) y Carl Seelkopf (Instituto de Investigación Química, Facultad de Farmacia, Universidad de los Andes, Mérida, Venezuela). Rev. Facultad de Farmacia, ULA, No. 20: 71, 1979.

Los alimentos infantiles: ¿preparaciones hogareñas o productos industrializados?.— José Félix Chávez (Facultad de Farmacia de la Universidad Central de Venezuela). Salud Pública (Caracas), abril-septiembre, No. 59, 1979. 14 Ref.