

BIBLIOGRAFIA LATINOAMERICANA

BRASIL

Effect of heat and moisture on the nitrogen solubility loss of flour from beans, *Phaseolus vulgaris*.— Maria Lúcia Pollio and Gualterio Bernardo Bartholomai (Departamento de Industrias, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina). *Ciência e Tecnologia de Alimentos*, 2(2): 143-150, 1982.

A study was made of the effect of temperature, time and moisture content on the loss of nitrogen solubility of heated flour from beans, *Phaseolus vulgaris*. Results show that the rate of solubility loss was increased with increasing moisture content up to 30%, and for highest moisture levels has a tendency to decrease. Additional results presented seem to indicate that an increase in moisture content was a tendency to decrease activation energies for solubility loss. 8 Ref.

Protein hydrolysate of tilapia: Determination of some pro-

cessing conditions (Hidrolisado protéico de tilápia: determinação de algumas condições de processamento).— Maria Lúcia Nunes and E. J. Geromel (NUPPA Universidade Federal da Paraíba, and Faculdade de Engenharia de Alimentos e Agrícola, UNICAMP, Campinas, São Paulo, Brasil). *Ciência e Tecnologia de Alimentos*, 2(2): 164-179, 1982.

A protein concentrate was produced at pilot plant scale from mechanically deboned flesh of tilapia. Four extractions with ethanol at 50°C, each followed by solids recovery in a basket centrifuge, were found to lower lipids content from 7.5% in the fish flesh to about 1% in the dried, end product. Extractions at 50°C were found to be more effective in removing lipids than extractions at room temperature. The product had 88-89% protein, 0.9% total lipids, 1% ash, and 4-7% moisture. At laboratory scale, hydrolysis time and temperature were investigated in order to obtain tilapia protein hydrolysate. For this, the minced,

deboned flesh was suspended in water (3.5% protein, w/v) and hydrolyzed with bromelain (1:100, enzyme:protein) at pH 6.5 (not adjusted). Two methods were compared for the determination of the extent of hydrolysis. Similar rates of hydrolysis curves were observed for both the increase in the amount of non-protein nitrogenous substances and the increase in the amount of solubilized material. Maximum rate of hydrolysis was observed at 50-60°C. 17 Ref.

Composition and nutritive value of four Nutrimaiz (*Zea mays*) cultivars in two maturation stages (Composição e valor nutritivo do quatro cultivares de milho (*Zea mays*) em dois estagios de maturação).— Valdemiro C. Sgarbieri, E. Contreras, J. Amaya, William J. da Silva and Félix, G. R. Reyes (Departamento de Planejamento Alimentar e Nutrição, Departamento de Genética e Evolução, e Departamento de Ciência de Alimentos, UNICAMP, Campinas, São Paulo, Brasil. *Ciencia e Tecnologia de Alimentos* 2(2): 180-193, 1982.

Chemical composition and nutritive value of Nutrimaiz (SuO₂), a new double mutant cultivar of maize, were studied with reference to the parent (Piramex sweet, SuO₂ and Maya Opaque-2, Suo₂) and

Normal Maya (SuO₂) at 20 and 60 days after pollination (DAP). The lysine content dropped from 4.0 and 4.3% at 20 DAP to 2.0 and 2.9% at 60 DAP for the Normal and Sweet Maize, respectively. Opaque-2 and Nutrimaiz presented the highest lysine and tryptophan contents at both stages of maturity. Nutrimaiz and the Sweet Maize had at 60 DAP the highest (8.1 and 8.5%) contents of total lipid, which was correlated with a high proportion of germ in these cultivars. Neutral lipids (90-95% of total) increased with maturation whereas glycolipids and phospholipids decreased. Linoleic (47 to 53%) is the predominant fatty acid followed by oleic (25-35%) and linolenic and stearic (1 to 3%) each. The tocopherols increased while the carotenes decreased with maturation. Sweet Maize and Nutrimaiz contained a higher soluble sugar content than Normal and Opaque-2. Protein nutritive value, PER and rate of growth of the rats fed Opaque-2 and Nutrimaiz at both stages of maturity were similar and close to casein. PER values, lower for Normal and Sweet Maize than for Nutrimaiz at 20 DAP, decreased even further with maturation. 29 Ref.

Esvaziamento gástrico. Um fenômeno pouco lembrado na fisiopatologia digestiva da criança (Gastric emptying in children. II. Effect of oral glucose-electrolyte osmolari-

ty).— (Editorial) José Vicente Martins Campos. Arq. Gastroent. S. Paulo, 19(2): 81-82, 1982.

O presente número dos Arquivos de Gastroenterologia insere o trabalho de Collares e Souza (5), o segundo de uma seqüência de estudos (4) que deve merecer atenção particular, pois coloca em destaque o complexo mecanismo do esvaziamento gástrico e suas implicações.

Sabe-se que a regulação do esvaziamento e da motilidade gástricos é a resultante de reflexos coordenados, de respostas hormonais e da química dos alimentos, fatores esses que há muito foram detalhados por Hunt e Knox (6). Entre outras, as variáveis em jogo envolvem: a) a natureza do alimento; b) as respostas motoras dependentes de inervação intrínseca e extrínseca do estômago; e, c) quanto às influências hormonais, são relevantes as ações fisiológicas indiscutíveis da gastrina, que estimula a musculatura lisa modulando a atividade mioelétrica (8) e as da *secretina* e *pancreozimina* (CCK), reduzindo a motilidade e retardando o esvaziamento gástrico (3).

Deve-se, entretanto, realçar o papel de sítios receptores duodenais — particularmente da primeira porção — que respondem rapidamente — no sentido de regularem o esvaziamento logo ao receberem os impactos das primeiras porções de alimento que transitam pela mucosa duodenal. A relevante participação

de receptores duodenais, há muito conhecida (6), quando se usam refeições de prova, predominantemente ácidas ou líquidas, é influenciada tanto pela osmolalidade e também, como tem sido sugerido (2, 7), uma dependência da *densidade energética* dos alimentos. Este último fato colocaria o controle de esvaziamento gástrico em função do número de K-cals/min. que penetram o duodeno. Aparentemente, tal mecanismo unificaria a maneira de se entender a ação sobre os receptores duodenais, isto é, por uma só via osmo a *enérgico-receptora*. De qualquer forma o trabalho de Collares e Souza confirma claramente o papel da osmolalidade e de seus valores — entre 200 e 300 mOsm/l — mais adequados ao esvaziamento regular do estômago, ao serem utilizadas as soluções hidratantes.

Este fato, por sua vez, vem de encontro com as vantagens do regular "marca passo" do esvaziamento gástrico para que o conseqüente fenômeno da absorção hidroeletrólítica jejunal se faça em condições propícias, isto é, através do transporte ativo pela membrana enterocitária (1), isto é, sem que a mesma sofra "Pressões" não homeostáticas.

A condição isosmolar, que deve guardar relação com a *densidade energética*, deve ser preservada, particularmente quando entram em jogo componentes fisiopatológicos decorrentes de enteropatias agudas ou crônicas, ou, o que é importante, nas distorções do fenômeno de

esvaziamento, um fato que é conhecido, quando prejudicado o ritmo básico do fundo gástrico ou quando surgem distúrbios motores antro-duodenais, que se instalam quando a atividade vagal se acha comprometida (9). O conseqüente fenômeno do "dumping" funcional — não pós cirúrgico — há muito descrito por autores alemães como "choque do delgado", deve voltar a ser reinvestigado, sobretudo na área pediátrica como co-fator nas diarreias crônicas secretoras ou prolongadas da criança. É desejável, além disso, que a correlação *osmolalidade densidade energética*, no esvaziamento gástrico (10), seja objeto de investigação nos futuros trabalhos da interessante série de Collares e Souza. 10 Ref.

Gastric emptying in children.

II. Effect of oral glucose-electrolyte osmolarity.— E. F. Collares and N. M. de Souza (Setor de Pediatria, Hospital das Clínicas, Departamento de Ginecologia, Obstetricia e Pediatria da Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo, SP, Brasil). *Arq. Gastroent. S. Paulo*, 19 (2): 83-86, 1982.

The gastric retention of three oral rehydration solutions whose osmolarity was changed by means of varying glucose concentration (mean values: 224, 312 and 422 mOsm/kg) was studied in 12 children (6 low birth weight infants

and 6 infants). The children were fed by a nasogastric tube. The 422 mOsm/kg solution caused slower gastric emptying than the 224 mOsm/kg solution. Thus, the use of an oral rehydration solution with osmolarity varying between 200-300 mOsm/kg is recommended. 15 Ref.

Malnutrition and malabsorption.— Ulysses Fagundes-Neto (Department of Pediatrics, Escola Paulista de Medicina, São Paulo, Brasil). *Arq. Gastroent. S. Paulo*, 19 (2): 91-98, 1982.

Malnutrition and diarrhea constitute a binomial practically inseparable where the factors of the environmental contamination act in a decisive way to trigger the symptoms due to the derangements in the digestive-absorptive process. Fecal flora bacterial overgrowth in the small bowel lumen induces innumerable modifications in the intestinal microecology, causing morphological lesions and bile salt deconjugation and, all together, lead to a decrease of the intestinal absorptive surface, glucose malabsorption, and sodium secretion. These morphological and functional derangements due to the unfavorable environmental conditions constitute the picture designated tropical enteropathy, and the intensity of the symptoms are dependent upon various factors including individual susceptibility. 76 Ref.

Avaliação das características tecnológicas de cultivares de milho (Technological characteristics of corn cultivars).

– Policarpo Vitti, Suzana Y. Fukuda, Renato Ferreira de Freitas Leitao and Antenor Pizzinato (Faculdade de Engenharia de Alimentos e Agrícola – ITAL – Campinas, SP, Brasil). *Bol. ITAL*, 19(2): 195-203, 1982.

This work presents and discusses the results obtained in a laboratory separation of the most important components of five corn cultivars: Pirãõ VD-2, ESALQ VF-1, Dent-Opaco, ESALQ VF-3 and HMD 7974. Of the cultivars, HMD 7974, which was considered to be the standard, gave the best results in terms of starch and germ yields, followed by the cultivar ESALQ VF-3. The cultivars Pirãõ VD-2, ESALQ VF-1 and Dent-Opaco showed a higher fiber content as their main characteristic. 9 Ref.

Heat treatment of triticale flour for use in breadmaking (Viabilidade do tratamento térmico da farinha de triticale visando a sua utilização em panificação).

– Renato Ferrera de Freitas Leitao, Maria de Fátima Martins Pinhel and Celio Cordeiro de Carvalho (Faculdade de Engenharia de Alimentos e Agrícola – ITAL – Campinas, SP, Bra-

sil). *Bol. ITAL*, 19(2): 205-218, 1982.

The variety of triticale used during this project was cinammon. Before milling, the grains were conditioned to 15% moisture content. The milling was performed in a pilot mill, Bühler model MLU 202. The average yield produced was 57.72%. As expected, the flour showed a high diastatic activity. This high diastatic activity is responsible for the low gelatinization of the starch and the low bread quality.

The triticale flour was subjected to a heat treatment with variation in the temperature and time of exposure. Bread made with this flour showed low volume, which indicated that the treatment was deleterious. The bread test showed that the heat treatment of triticale flour is not to be recommended since, besides reducing the diastatic activity, which would be ideal, it seems that it simultaneously tends to cause damage to the glutinic protein. 20 Ref.

ESTADOS UNIDOS

Protein quality evaluation of corn tortillas, wheat flour tortillas, pinto beans, soybeans and their combinations.— Mauro E. Valencia, Mitchell G. Vavich, Charles W. Weber and Bobby L. Reid (Research based on

the M. S. Thesis from the first author submitted on completion of the graduate college requirements for Agricultural Biochemistry and Nutrition at the University of Arizona, and Departments of Animal Sciences and Nutrition and Food Science, University of Arizona, Tucson, Arizona). *Nutrition Reports International*, 19(2): 195-201, 1979.

The protein quality of corn tortillas, wheat flour tortillas, pinto beans, corn-soy tortillas (90% corn:10% soy), corn-soy tortillas (80% corn:20% soy), corn tortillas-pinto beans (50% corn tortillas:50% pinto beans) and wheat flour tortillas-pinto beans (50% wheat flour tortillas:50% pinto beans) were measured by protein efficiency ratio (PER), net protein ratio (NPR), nitrogen utilization (NU) and relative nitrogen utilization (RNU). Protein score values were calculated according to the FAO/WHO amino acid pattern and whole egg amino acid composition, with and without consideration of apparent amino acid digestibilities. The methods used in this experiment were compared for protein quality measure. NU, RNU and PER proved to be more desirable methods. According to NU and RNU, the corn-soy (80:20) mixture had the highest protein quality followed by corn-soy (90:10). The combinations of corn-beans (50:50)

and wheat-beans (50:50) were better than the single sources, corn, wheat or beans, although they were not significantly different from each other. Protein efficiency ratio (PER) values followed approximately the same sequence; this was not seen with NPR values. 6 Ref.

MEXICO

Mezcla de frijol-tortilla de maíz, frijol-tortilla de harina de trigo, de la dieta sonorense. Valor nutricional de las proteínas de las mezclas. — Floria M. Yépiz, Martha N. Ballesteros, María I. Grijalva, Enrique Ramos y Mauro Valencia (Centro de Investigación en Alimentación y Desarrollo, Hermosillo, Sonora, México). *Rev. Tecnol. Aliment. (Méx)*, 18 (1): 16-23, 1982. Trabajo premiado en el XIII Congreso de Ciencia y Tecnología de Alimentos. ATAM y CCTC.

Uno de los aspectos positivos de la dieta actual del mexicano, lo constituye la tradición que existe en cuanto al consumo de cereales y leguminosas. Esta situación se manifiesta principalmente para la combinación frijol-tortilla de maíz y en estados del norte del país, frijol-tortilla de harina de trigo. Esta combinación natural de cereal-leguminosa, trae como consecuencia un

mejoramiento en la calidad de la proteína consumida, vía la complementación de aminoácidos esenciales. En este trabajo se revisaron aproximadamente mil encuestas de recordatorio de 24 horas, realizadas en las zonas urbanas y rurales del Estado. Se determinaron las combinaciones estadísticamente distintas en cuanto a grupos poblacionales (preescolares, escolares, adolescentes, adultos, mujeres embarazadas y lactantes) y siete regiones geográficas (Mazatán, Yécora, Alamos, Sahuaripa, Arivechi, La Colorada y zonas urbanas marginadas de Hermosillo), obteniéndose las siguientes combinaciones: frijol-maíz 60.

44:39.56 y 44.0:56.0; frijol-trigo 50.18:49.82; 66.52:33.48, y 58.8:41.2 en base húmeda. A estas mezclas se les realizó el ensayo de índice de eficiencia proteínica (PER), obteniéndose los siguientes resultados: 2.36, 2.81, 2.93, 2.52 y 2.77, respectivamente. Asimismo, se realizó el ensayo del valor relativo de proteína (RPV), relación neta de proteína (NRP) y digestibilidad aparente de proteína, en los que se confirma la alta calidad de proteína de las mezclas y en la que los resultados no indicaron mejor complementación de frijol-tortilla de harina de trigo que de frijol-tortilla de maíz. 22 Ref.