Hemolytic Potential of Piroxicam and Diclofenac Sodium Intramuscular Solutions

Shu-Jung Chen[a], Mei-Yu Hsu[b], Chau-Yang Chen[c] and Hsing-Chu Hsu[a]*

Department of Pharmaceutics, Chia Nan Jr, College of Pharmacy[a]
Tainan-Hsien, Taiwan, Republic of China
School of Medicine, Kaohsiung Medical College[b]
Kasohsiung, Taiwan, Republic of China
Graduate Institute of Pharmaceutical Sciences, Taipei Medical College[c]
Taipei, Taiwan, Republic of China

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ABSTRACT

The hemolytic potentials of 40% (w/v) propylene glyol (PG) solution, the commercially available piroxicam and diclofenac sodium injections were investigated with fresh rabbit and human blood. The hemolytic characteristics of 40% PG solution and piroxicam injections appeared to be different in rabbit and in human blood. Since the hemolytic potential of injectable solution has been regarded as an in vitro measure of the tissue irritancy of the injections, it is recommended to employ the fresh human blood in performing the test. The results of the study showed the commercial piroxicam injections were significantly less hemolytic than 40% PG solution, the cosolvent used in preparing the injections. Besides, there marked differences in the hemolytic potential among the commerical piroxicam injections. A difference approximately 30% of the mean percent of hemolysis was oberved. The differences of the hemolytic potential among the commercial diclofenac sodium injections were more dramatic than those of the piroxicam injections that about 4 to 5 times difference in percent of hemolysis was observed. The findings suggest that the optimization of the injectable formulation may reduce the cell destruction and the local irritancy of the injections. The pooled percents of hemolysis of commercial piroxicam injections were $12.8 \pm 3.3\%$ (mean $\pm$ SD, $n = 18$) and diclofenac sodium injections were $30.4 \pm 11.8\%$ ($n = 25$). The Welch test showed diclofenac sodium injections were much more hemolytic than piroxicam injections ($p < 0.01$). The result was comparable with the reported clinical tolerability.

Key words : Piroxicam; Dicofenac sodium; Injections; Hemolysis.

Solubility Profiles, pK_a Values and Stability of Piroxicam in Parenteral Solutions

Shu-Jung Chen[a], Mei-Yu Hsu[b], Chau-Yang Chen[c] and Hsing-Chu Hsu[a]*

Department of Pharmaceutics, Chia Nan Jr. College of Pharmacy[a]
Tainan-Hsien, Taiwan, Republic of China
School of Medicine, Kaohsiung Medical College[b]
Kaohsiung, Taiwan, Republic of China
Graduate Institute of Pharmaceutical Sciences, Taipei Medical College[c]
Taipei, Taiwan, Republic of China

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ABSTRACT

The solubility profiles, pK_a values and stability of piroxicam in parenteral solutions were investigated. The solubility of piroxicam increased along with the increase in concentration of cosolvents. The efficacy of cosolvency was in the order of N, N-dimethyl acetamide (NN) > glycofurol (GF) > propylene glycol (PG). The incorporation of nicotinamide in the solutions significantly increased the solubility of piroxicam. The approximate pK_a values of piroxicam in 10, 20, 30 and 40% (w/v) solutions of NN, GF and PG were estimated. The pK_a values were 5. 16 (PG), 5.49 (GF) and 6.00 (NN) in the 40% cosolvent solutions at 26°C. The piroxicam solution (20 mg/ml) showed considerably photosensitive to the sunlight but rather stable to the temperature stress. After nine months incubation at 37 and 45°C, the remaining percent of piroxicam was higher than 90% of the labelled amount. The data obtained, from 45 and 60°C accelerated stability tests could be fitted to the first order kinetics. The degradation rate constants were 0.0106 $month^{-1}$ (45°C) and 0.0181 $month^{-1}$ (60°C). Assuming the Arrhenius equation could be applied to the system and the 27.5°C was the annual virtual temperature in Taiwan, a tentative shelf-life of more than two years for piroxicam injection was estimated.

Key words : Piroxicam; Solubility; pK_a; HPLC; Stability; Parenteral solution.

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Entrapment of bioactive compounds within native albumin beads: IV. Characterization of drug release from polydisperse systems

Ming-Thau Sheu[1] and Theodore D. Sokoloski[2]

[1]*Graduate Institute of Pharmaceutical Sciences, Taipei Medical College, Taipei, Taiwan 105 (Republic of China) and*[2] *Department of Pharmaceutical Sciences, SmithKline Beecham Pharmaceuticals, King of Prussia, PA 19406 (U. S. A.)*

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ABSTRACT

A heuristic approach is used to identify the mathematical model best describing the release of drug from a single particle in a polydisperse system. The method uses only experimental measures of particle size distribution and total release from the dispersion as a function of time. The routine is based on the observation that in the first 40% of total drug release the volume-surface diameter of the distribution, d_{vs}, can be used as a single diameter representing the entire population to estimate model dependant release parameters. This property was tested in four different single particle release models having distributions of varying standard deviation; narrow, intermediate, and wide. In its application to drug imbedded in a microsphere, the particle size distribution of the system was measured and the volume-surface diameter determined. Release from the population was measured under sink conditions. The first 40% was fit (SAS) using d_{vs} and assuming different mechanism to be operating; release parameters characteristic of the assumed single particle mechanism were thus generated. Since only one of the assumed mechanisms should be operating, when the parameter estimates for each are used over a larger time frame (beyond 40%) in conjunction with the effects expected for individual particles of known size via measured distribution, the best single particle model should be that one giving the best overall fit. For norgestrel in a serum albumin microsphere, the single particle model best describing release was matrix diffusion of drug from a particls surrounded by a hydrodynamic layer.

Key words : Polydisperse system, Release kinetics; Single particle contribution

Drug Design and Delivery 7; 251-257, 1991

Prolongation of Drug Release by Covalent Bonding of Drugs to Serum Albumin Microbeads

MING-THAU SHEU*[1], CHENG-HSIUNG LIU[1], and THEODORE D. SOKOLOSKI[2]

[1]*Graduate Institute of Pharmaceutical Sciences, Taipei Medical College, Taipei, Taiwan, ROC.*
[2]*Pharmaceutical Sciences, L-913, Smithkline Beecham, PO Box 1539, King of Prussia, PA 19406-0939, USA*

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ABSTRACT

Reaction conditions for the covalent bondings of 5′-dexoxy-5-fluorouridine to serum albumin microbeads by means of a water-soluble carbodiimide were studied. Optimum coupling of dFUR to the microbeads occurred when pure water was used as solvent. There was no significant difference in the bonding efficiency for microbeads prepared at different stirring speeds, and there was a limit to the amount of dFUR that could be bound with increasing reaction time. Yields were low possibly because of competing coupling reactions involving carbodiimide and other reactive groups in the protein. The release of dFUR from dFUR-bound microbeads was slow and biexponential. The fraction of dFUR bound in the interior of the microbeads increased with increasing reaction time.

Key words : Serum albumin microbead, 5′-deoxy-5-fluorouridine (dFUR), 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide (EDCI), covalent bonding efficiency

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Effects of Chemically defined Tannins on Poly(ADP-ribose) Glycohydrolase Activity

Yan-Jyu Tsai[1], Hideaki Abe[2], Hideharu Martuta[2], Tsutomu Hatano[3], Hiroshi Nishina[2], Hiroshi Sakagami[4], Takuo Okuda[3] and Sei-ichi Tamuma[2]

[1]*Department of Pharmacology, Faculty of Medical Sciences, Taipei Medical College, 250-Wu-Hsing Street, Taipei, Taiwan, RO. O. C.*
[2]*Department of Life Science, Faculty of Bioscience and Biotechnology, Tokyo Institute of Technology, Yokohama, Kanagawa 227, Japan* [3]*Faculty of Pharmaceutical Sciences, Okayama University, Tsushima, Okyama 700, Japan* [4]*First Department of Biochemistry, School of Medicine, Showa University, Hatanodai, Shinagawa-ku, Tokyo 142, Japan*

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ABSTRACT

Three classes of chmically defined tannins, qallotannins, ellagitannins and condensed tannins were examined for their inhibitory activities against purified poly(ADP-ribose) glycohydrolase. Ellaqitannins showed higher inhibitory activities than gallotannins. In contrast, condensed tannins, which consist of an epicatechia gallate (ECG) oligomer without a glucose core were not appreciably inhibitory. Kinetic analysis revealed that the inhibition of ellagitannins was competitive with respect to the substrate poly (ADP-ribose), whereas gallotannins exhibited mixed-type inhibition. These results suggest that conjugation with glucose of hexahydroxydiphenoyl (HHDP) group, which is a unique component of ellagitannins, potentiated the inhibitory activity, and that the structure of ellagitannins may have a functional domain which competes with poly (ADP-ribose) on the poly (ADP- ribose) glycohydrolase molecule.

中耳積液之前列腺素 E2

賴銘堂　陳政和　李正順　張文昌*　李宏生

台北醫學院　耳鼻喉科

摘要

由花生四烯酸(arachidonic acid)代謝產生的物質如前列腺素(prostaglandin)及白三烯素(leukotriene)，與積液性中耳炎有關。此類物質可由發炎之組織大量釋出，而於血行中迅即被代謝掉，故可用於局部發炎狀況之研究。本研究收集302個中耳積液檢體，以放射性免疫法測得175個檢體中前列腺素E2(PGE2)濃度。統計分析其中169個檢體，得其PGE2平均濃度爲31.0±19.4 ng/ml(平均值±標準值)。其中得自鼻咽癌患者的檢體有22個，其PGE2平均濃度爲32.9±19.7　ng/ml；鼻竇炎患者的檢體有8個，其PGE2平均濃度爲34.5±16.2 ng/ml；小兒急性漿液性中耳炎的檢體有10個，其PGE2平均濃度爲48.2±37.3 ng/ml；新鮮例的檢體有22個，其PGE2平均濃度爲17.1±6.8 ng/ml；經類固醇治療後的檢體有7個，其PGE2平均濃度爲18.9±8.9 ng/ml。比較19組再發性中耳積液的檢體，發現抗生素、抗組織胺及非固醇類消炎藥(NSAIDs)的使用，對PGE2濃度無定向影響；退充血劑(decongestant)的使用使PGE2濃度升高；只作鼓膜穿刺抽取積液不給藥、或以類固醇治療者PGE2濃度降低。再發性中耳積液中PGE2濃度變化有高值變化，低值變高的現象。(中耳醫誌1991；26：358-366。)

Key words: middle ear effusion, prostaglandin.(中耳積液，前列腺素。)

組織球增多症——病例報告

賴銘堂　許文龍　趙志堅　詹素心　李宏生
台北醫學院　耳鼻喉科

摘　要

組織球增多症(histiocytosis)由Lichtenstein於1953年提出，用以描述1種以良性組織球增生爲主要特徵的網狀內皮系統的疾病。這種疾病可發生於許多組織器官，而呈現各種臨床症狀。本文報告1名5歲男孩，右耳惡臭、耳漏及聽力障礙2年多，曾經當做中耳炎及外耳炎治療無效。本科經放射線檢查，發現病人顱骨有多處溶骨病灶，切片檢查證實爲組織球多症。治療過程中曾出現尿崩症，使治療增加不少困擾。因病人耳部的非特異性症狀，使診斷延誤，頗堪省思。(中耳醫誌1991；26：79-84。)

Key words: histiocytosis, eosinophilic granuloma.(組織球增多症，嗜伊紅性肉芽腫。)

Acta Med Okayama 45(6); 409-416, 1991

Aldehyde Dehydrogenase Deficiency, Flush Patterns and Prevalence of Alcoholism: An Interethnic Comparison.

Chiao-Chicy Chen, Hai-Gwo Hwu, Eng-Kung Yeh, Kiyoshi Morimoto, Saburo Otsuki.

(Received April 20, 1988)

ABSTRACT

A study was performed to verify that the prevalence of alcohol abuse and dependence in Formosan aborigines differs from that of Taiwanese (Chinese Han peple), using analysis of aldehyde dehydrogenase (ALDH) isozymes and flush patterns on randomly sampled 70 Atayal, 66 Paiwan, 61 Yami and 94 Taiwaneses subjects were studied. The activity of an isomer of ALDH having a low Km (ALDH-I) in hair roots was analyses by isoelectric focusing assay. The subjective experience of flushing respones after alcohol ingestion was assessed. Results showed that the rate of ALDH-I deficiency in Taiwanese (51.1%) was significantly higher than in aborignines, i.e., 64%, 3.9%, and 0% in Atayal, Paiwan, and Yami subjects, respectively. The percentage occurence of ALDH-I deficiency and prevalence of alcohol dependence in Taiwanese and aborigines were negatively correlated. The predominant pattern of self-reported flush response after alcohol use among aborigines was of slow onset. The flush repsonse to alcohol ingestion was examined in relation to aldhyde metabolizing enzyme. Since alchol sensitivity is an important factor in the development and maintenance of the alcohol ingestion habit in humans, our results support the hypothesis that there is biological basis in the different rates of alcohol abuse and dependence among different ethnic groups.

CHIN. J. Mental Health 5(1); 1-9, 1991

Alcoholism: An Emerging Mental Health Problem in Taiwan.

Hai-Gwo Hwu, Eng-Kung Yeh, Chu-Chang Chen.

ABSTRACT

The prevalence rate of alcoholism was only 0.01% in Taiwan Chinese and 0.1% in aborigines by using census survey method in 1940's. Clinical cases of alcoholism were rare in clinical psychiatric service at that time. In 1980's, the epidemological study using the Chinese Diagnostic Interview Schedule as case identification tool, revealed that the lifetime prevalence of alcohol abuse (AA) and alcohol dependence (AD) in Taiwan Chinese were 3.4%, 1.5%; 8.0%, 1.8% and 6.3%, 1.2% in the metropolitan city, small town and rural village respectively. By using the similar case identification tool, the Taiwan aborignines of Atayal, Paiwan and Yamei had respectively the lifetime prevalence of the AA and the AD of 11.6%, 11.4%; 14.2%, 9.0% and 8.1%, 6.4%. Nowadays, the presence of the clinical cases of alcoholism in the psychiatric inpatients are constant. The prevalence study of alcoholism in the non-psychiatric population of the general hospital also showed unnegligible case number of alcohlism. The facilities of the beer houses, bars are very popular in Taiwan. Drinking is a very popular entertainment and the peopole usually forced others to drink more in the social intercourse. The high tolerance of alcohol is also considered as a socially desirable trait which can be proud of in front of others. The mass media frequently reported the news of behavioral problems such as physical violence, accidents related to excessive drinking. All these highly suggested that alcoholism does have increased prevalence in the present day society of Taiwan.

J Formosan Med Assoc 90(5); 509-513, 1991

Maintenance Lithium Levels Could be Lowered; Baed on Taiwanese and Danish Studies.

Yong-Yi Yang, Eng-Kung Yeh, Sidney S. Chang, Hwei-Chuang Deng, Ching-Fa Lee.

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ABSTRACT

Twenty-two patients, 8 males and 14 females, who had been lithium-free for at least 1 week were inlcuded in this tudy. All patients took 900 mg of Lithonate at 8:00 a.m. while in a fasting state. A 5 ml blood sample was taken at 9:00 a.m., 10 a. m.., 12 noon, 3p.m., 5 p.m., 11 p.m., and at 9 a. m. and 3 p.m. on the next day. Plasma was separated immediately, and the lithium level was measured by atomic absorption spectrophotometry. The pharmacokinetic parameters were as follows: K_{12} (microconstant)= 0.3455±0.5345 (mean±SD) h^{-1}; K_{21} (microconstant)=0. 1691±0.1242 h^{-1}; K_{10} (microconstant)= 0.1320±0.111 h^{-1}; V1 (volume of distribution of central compartment)= 16.9057±5.9384 1; Vss (volume of distribution at steady state)=38.8917±11.4540 1; V-beta (volume of distribution of elimination phase)=46.3809±13.8472 1; α (distribution rate constant)= 0.5932±0.7090; and β (excretion rate constant)= 0.0361±0.0141. The mean elimination half-life, AUC (the inder the curve) and clearance were 22.5±9.9 h (range from 9.6 to 50.4 h), 16. 33±5.52 $mmoll^{-1}h$ (8.69 to 31.81 $mmoll^{-1}$ h), and 1.65±0.53 $1h^{-1}$ (0.76 to 2.28 $1h^{-1}$) or 28.59±9.58 ml/kg^{-1} h^{-1}, respectively. There were no statistically significant differences in β, AUC and clearance between Taiwanese/Chinese and Danish results. The possibility of lowering the traditional prophylactic therapeutic range of lithium to around 0.5-0.8 mmol/L is supported by the results of this study.

Alcoholism and Depression: A Biomedical Approach 132-149, 1991

Prevalence and Symptoms of Depression in Chinese Community Population: Comparison with American a Preliminary Report

Eng-Kung Yeh, Hai-Gwo Hwu, Ly-Yun Chang, Yuan-Lih Yeh.

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ABSTRACT

Cross-cultural comparison of the findings of the two nation-wide psychiatric epidemiological studies of community population in Taiwan (TPEP) and in the US (NIMH ECA Program) reveals that; 1) lifetime prevalence of depressive disorders are significantly lowere in Taiwan than those in the US, more significant for mjor depression, and less significant for dysthmic disorder; 2) the prevalence rates of depressive disorders are higher in townships than in metropolis and rural villages in Taiwan, while the prevalence of the same disorders are higher, or tend to be higher in the urban than rural area in the US with different demographic distrubation of prevalence rates between the two studies; 3) Chinese as a whole show significantly lower rate in endorsement of 8 depressive symptoms than their counterpart in the US. The implications of the findings are discussed.

T. Y. Lin, K. H. Asai & T. Takashi (Eds). Mental Hospital as a Base for Community Mental Health in Asian Cultures. Keimei Publishing (O. Tokyo) 217-239, 1991

Community Mental Health Services in Taipei: The Model of the Taipei City Psychiatric Center.

Eng-Kung Yeh

(Received April 20, 1988)

ABSTRACT

This chapter reports the model of community mental health programs developed by the Taipei City Psychiatric Center (TCPC) in Taipei City since 1972. The programs is typically the "hospital-based" model integrating the services in community into total conprehensive and continuous care systems of the TCPC by establishing the care delivery network between the TCPC and the 16 health stations and several agencies concern with counseling, crisis-intervention, social welfare etc. in the city for case-finding, case-referral and follow-up of the discharged cases. The TCPC model successfully included the other three major psychiatric treatment centers to develop the similar care delivery network as mentioned above within their own areas respectively, and have, thus, contribued to the establishment of four catchment areas for mental health services in Taipei City. The TCPC model has been recommended by the Department of Health of the central government to follow in the other cities and prefectures of the nation. Some research findings which confirm the value and advantages of model are presented. The author compared the characteristics of the "hospital-based" program with that of "community-based" one, and emphasizes that it is possible for the hospital to assist development of "community-based" service programs for advancement of soical rehabilitation in community.

Thrombosis Research 64; 91-100, 1991

Inhibition of Platelet Aggregation by Some Flavonoids

Shu-Huey Tzeng, Wun-chang Ko, Feng-Nien Ko*, and Che-Ming Teng*

*Department of Pharmacology, Taipei Medical College and *Pharmacological Institute, College of Medicine, National Taiwan University, Taipei, Taiwan.*

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ABSTRACT

The inhibitory effects of five flavonoids on the aggregation and secretion of platelets were studied. These flavonoids inhibited markedly platelet aggrefation and ATP release of rabbit platelets induced by arachidonic acid or collagen, and slightly those by platelet-activating factor. ADP-induced platelet aggregation was also suppressed by myricetin, fisetin and quercetin. The IC_{50} on arachidonic acid-inuced platelet aggregation was: fisetin, 22 μM; kaempferol, 20 μM; quercetin, 13 μM; morin, 150 $\mu M < IC_{50} < 300$ μM. The thromboxane B_2 formations were also inhibited by flavonoids in platelets challenged with arachidonic acid, Fisetin, kaempferol, morin and quercetin antagonized the aggregation of washed platelets induced by U46619, a thromboxane A_2/prostaglandin endoperoxides mimetic receptor agonist. In human platelet-rich plasma, querctin prevented the secondary aggregations and blocked ATP release from platelets induced by epinephrine or ADP. These results demonstrate that the major antiplatelet effect of flavnoids tested may be due to both the inhibition of thromboxane formation and thromboxane receptor antagonism.

J Am Diet Assoc 91; 46-51, 1991

Use of modified diets in nursing homes

Shu-Jan J. Lan, PhD,
Catherine L. Justice, PhD, RD
Department of Nutrition and Health Science, Taipei Medical College.

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ABSTRACT

Randomly chosen medical charts of 212 elderly subjects in 11 nursing homes were reviewed to determine which characteristics of the subjects were most closely associated with their diet prescriptions. The chart reviews indicated that 104 (49.0%) of the 212 subjects had some type of nutrient-modified diet prescription. Eight patients who were tube fed were not included in subsequent analyses. Sodium restriction was the most common modification (60 〔29.4%〕 of the remaining 204 patients) and calorie-controlled diets were also common (52 〔25. 5%〕 of the patients). Of the 55 patients with hypertension, 31 (56.4%) had no sodium restirction. Only 10% of all low-sodium diets limited sodium to 2 g per day. Of the 38 patients with diabetes, 7 (18.4%) had no prescription for calorie control, and there was no indication that increased dietary fiber was encouraged for diabetic patients. Only one of the 121 subjects with a diagnosis of coronary heart disease of atherosclerosis had a prescription for a cholesterol-lowering diet. Characteristics of the subjects not specifically related to diet or diagnosis, such as age, sex, duration of stay, and level of care, had no significant relationship to diet prescription. These findings suggest that the practitioners in our sample were not convinced of the efficacy of modified diets to control disease for most nursing home residents. J Am Diet Assoc. 1991; 91; 46-51.

J Chinese Nutrition Society 16; 157-175, 1991

白米、糙米及添加聚糊精的白米飲食對青年男子代謝的影響[1]

鄭心嫻　謝明哲　朱哲輝

[1]台北醫學院　保健營養學系

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摘　要

本實驗的目的在探討稻米中醣類、膳食纖維及聚糊精對人體代謝的影響。以省產台農67號粳米做爲主食類來源，設計2750大卡的均衡飲食，三天爲一循環。受試者爲五名台北醫學院的男性學生，實驗時間前後共五十一天，分爲三個階段：糙米、白米和白米添加聚糊精。實驗每階段開始和結束時抽血做血液分析；每階段最後七天收集糞便；每日飲食均保留相同的一份。以上糞便及飲食樣品均依據AOAC之標準方法分析水份、灰份、米脂肪、粗蛋白和粗纖維，另再分析樣品中之總膳食纖維和糞便中膽酸含量。實驗結果發現：一、實驗飲食對於糞便重量的影響：糙米飲食和聚糊精飲食皆可顯著增加糞便的重量糙米飲食階段增加42.6%，聚糊精飲食對糞便組成的影響：糙米飲食階段可顯著增加糞便中粗脂質的排泄量，糙米飲食產生糞便中粗纖維含量約爲白米飲食的兩倍，但是沒有統計上顯著差異。食用聚糊精飲食可顯著增加糞便中非氮抽出物含量，推測應爲飲食中添加的聚糊精所致。而白米飲食階段則可顯著提高糞便中的膽酸含量，印證了受試者食用白米飲食使血清膽固醇降低的實驗結果。三、實驗飲食對於消化率的影響：糙米飲食可顯著降低飲食中粗纖維的消化率；聚糊精飲食則可顯著降低醣質的消化率並提高總膳食纖維之消化率。四、實驗飲食對於血清膽固醇達22.8mg/dl；食用糙米飲食可降低血清三甘油酯16.8mg/dl，但皆未具統計上的顯著差異。

關鍵語：白米、糙米、聚糊精、代謝

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The Selectivity of Ion Exchange Resins for Quaternary Ammonium Surfactants

P. C. Chiang* and E. E. Chang**

*Professor, Graduate Institute of Environmental Engineering, National Taiwan University, Taipei, Taiwan, ROC.

**Associate Professor, Department of Analystical Chemistry, Taipei Medical College, Taipei, Taiwan, ROC.

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ABSTRACT

The results of the resin selectivity tests performed in this investigation were consistent with the concept proposed by Kressman and Kitchener, except for the selectivity coefficient of LPC toward Amb-200 and resin A linear correlation ($R^2=0.999$) between log K_D (Selectivity coefficient) and Log D (Hydrated ionic diameter) was observed for quatenary ammonium ions in which the Van der Waals force were shown to be predominant between the counter ions and the fixed ionic groups for the weak acidic cheating resin XE-318.

Proceedings of the International Conference
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Assessment of Rapid Method for Determining Heavy Metals Concentration in Industrial Wastewater

P. C. Chiang* and E. E. Chang**

*Professor, Graduate Institute of Environmental Engineering,
National Taiwan University, Taipei, Taiwan, ROC.
**Associate Professsor, Department of Analytical Chemmistry,
Taipei Medical College, Taipei, Taiwan, ROC.

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ABSTRACT

The objective of this research work is conductd to evaluate the applicatibility of selecting the rapid method to replace the conventional standard method for determining heavy metals concentration in the real samples which were obtained from the textile, electroplating, leather, and food processing industries. Statistical techniques including paired t-test, factor analysis and regression analysis were introduced to compare the analytical results from the above two methods. A comprehensive evaluations on these two methods based on the principle, accuracy, precision. linear range, interference, detection limit, ease of operation, and cost analyses are revealed.

Keywords: Rapid method; paried t-test; precision; recovery; difference; heavy metals.

A Preliminary Study of Papaverine HCl Gel Dosage Form

Ching-Cheng Kao, Meng-Chen Hsieh and Ming-Thau Sheu*

School of Pharmacy, Taipei Medical College
Taipei, Taiwan, R. O. C.
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ABSTRACT

The possiblity of preparing an aqueous transparent gel of papaverine HCl for non-parenteral route of administration was investigated. The penetration of papaverine from gels through synthetic membrane and the skin of hairless mouse were also examined. The gels were produced using a serial mixture of water, alcohol and propylene glycol as vehicle, and gelled with neutralized form of Carbopol 940 with varying polarity of bases including NaOH, triethanolamine, diisopropanolamine, and cocamine. Initially, the workable region forming a transparent gel was defined in a ternary phase diagram for each basic agent. It showed that the more nonpolar of the basic agent usd, the higher content of nonpolar component in the vehicle was necessary to form a transparent gel when no addition of papaverine. As papaverine presented and triethanolamine employed as a neutralizing agent, this workable region of vehicle became narrower. The penetration of papaverine through membrane followed Higuchi model, whereas a membrane control mechanism was demonstrated in the case of skin permeation. Apparently, there exists no any correlation between permeation rate constant through membrane and the skin. Finally, the transparent gel with a reasonable skin permeation rate for papaverine was produced with the vehicle containing a water fraction ranging from 45 to 55% w/w and the rest of fraction was consisted of alcohol and propylene glycol at a proper ratio.

Key words: Papaverine HCl; Carbopol; Aqueous transparent gel; Permeation rate; Ternary phase diagram.

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Hypervitaminosis A and the Role of Live Microsomal Enzyme System in Vitamin A Metabolism

Jen-Fang Liu[1,2] Ching-Jang Huang[2]

[1]*School of Nutrition and Health Science, Taipei Medical College*
[2]*Department of Agricultural Chemistry, National Taiwan University*

ABSTRACT

Adequate intake of vitamin A is essential for the maintenance of normal vision, integriety of epithelial structure, cellular differentiation, growth, and development. Large doses of vitamin A is used therapeutically for a variety of dermatologic diseases, hypogonadism, abnormal dark adapation, xerophthalmia etc. However, it is noteworthy that excess intake of vitamin A is hepatotoxic. Moreever, hypervitaminosis A has been shown to be teratogenic in animal study and to be related to congenital malformation in newborn of mother overdosed by vitamin A during pregancy.

Recently, it has been demonstrated that the two major vitamin A compounds-retinol and retinoic acid, could be oxidized to more polar metabolites, including: 4-hydroxy-retinol, 4-hydroxy-retinoic acid and 4-oxo-retinoic acid by the liver microsomal cytochrome P-450 containing monoxygenase. One of the cytochrome P-450 isozymes-P450IIC8 (in human) or P450IIC7 (also called P450f, in rat) showed the highest metabolizing activity. The activity of this constitutive P450 isozyme in the liver microsome of human and rat is low but could be induced to higher level by certain substances, such as ethanol, vitamin A and drugs.

Therefore, the microsomal P450s not only play a major role in the detoxification of foreigh compounds but also is involved in normal physiological processed, including vitamin A metabolism. It may participate in maintaining the balance between those vitamin A concentration that promote cellular integrity (and oppose the development of cancer) and those concentation that cause cellular toxicity, further studies are necessary to clearify this role.

Key words: hypervitaminosis A, vitamin A metabolism, cytochrome P-450

Drug Design and Delivery 7; 65-73, 1990

Drug Release From Glutaraldehyde-Treated Fibrin Gels

HSIU-O HO*[1], MING-THAU SHEU[1], THEODORE D. SOKOLOSKI[2] and CHAU-YANG CHEN[2]

[1]*Graduate Institute of Pharmaceutical Sciences, Taipei Medical College, Taipei, Taiwan, R. O. C. and* [2]*Pharmaceutical Sciences, L-913, Smithkline Beecham, P. O. Box 1539, King of Prussia, PA 19406-0939, USA*

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ABSTRACT

Glutaraldehyde treatment of dexamethasone-containing cylindrical fibrin gels (obtained by the thrombin-induced polymerization of fibrinogen in the presence of the drug) causes cross-linking of the gels and modification of the pore structure. The effect on the release of dexamthasone was assessed by measuring the diffusion coefficient of the drug across treated and untreated gels; diffusion across the treated gel was significantly decreased as compared with untreated gels, but was little affected by the concentration of glutaraldehyde used in the treatment. In biodegradable tests, the treated gels (all concentrations of glutaraldehyde) were resistant to digestion even in the presence of plasmin, but untreated gels were digested, and the digestion rate was accelerated by plasmin. The volume of the gels was progressively reduced as the concentration of glutaraldehyde was increased or the amount of fibrinigen was decreased, but the extent of the reduction did not correlate with the changes in the diffusion coefficient.

Key words : Fibrin gels, cyclindrical model, biodegradability, diffusion coefficient, dexamethasone phosphate

CHIN. PHARM. J., 42(1), 1990

Mathematical Evaluation of Drug Release from Cylindrical Fibrin Gel

Hsiu-O Ho*, Ming-Thau Sheu and Chau-Yang Chen

Graduate Institute of Pharmaceutical Sciences, Taipei Medical College
Taipei, Taiwan, Republic of China

(Received July 31, 1989)

ABSTRACT

The purpose of this study was to validate the mathematical model which best described the drug release from cylindrical shape, and to characterize the release of dexamethasone phosphate from cylindrical fibrin gel by calculation of diffusion coefficient using early time and late time approximation method. Drug release studies from cyclindrical fibrin gel containing different amount of fibrinogen were carried out at 37.0±0.1°C in the double-walled beaker containing-500 ml of 0.05 M tris buffer (pH 7.4) with different ionic strength. The results show the effect of the amount of fibrinogen and ionic strength are insignificant for dexamethasone phosphate released from cylindrical fibrin gel evaluated by diffusion-coefficient based on early time approximation method. Besides that the effect of the amount of fibrinogen is also insignificant, evaluated by diffusion coefficient based on late time approximation method, but the effect of ionic strength is profound when using large amount of fibrinogen.

Key words: Fibrin gel, Cylindrical model, Early time and late time approximation method, Diffusion Coefficient, Dexamethasone phosphate.

Factors Affecting the Gelation and Solution Temperature of Pluronic F-127 Solution

Huey-Lan Chiou and Ming-Thau Sheu*

Graduate Institute of Pharmaceutical Sciences, Taipei Medical College
Taipei, Taiwan, Republic of China

(Recived Fecember 2, 1989)

ABSTRACT

The purpose of this study was to evaluate the factors which can affect the gelation and solution temperature of PF-127 solution. These factors examined in this study included the amount of PF- 127 used, ionic strength, pH value and phosphate buffer concentration of solution, and the addition of PEG 6000. The results show that the range between gelation and solution temperature increases with increasing the amount of PF-127 as a result of decreasing gelation temperature and increasing solution temperature. The ionic strength in the range examined only expresses slight effect on both gelation and solution temperatures of PF-127 aqueous solution. Increasing pH value also decreases gelation and solution temperature simultaneously. But the effect on gelation temperature is not so evident as that of solution temperature. Regarding to the concentration of phosphate buffer, its effect is quite similar to that of salt on these two temperatures. Furthermore, the effect of pH value of 7,5 on solution temperature is more profound at higher phosphate buffer concentration. The addition of PEG 6000 causes an increase in gelation temperature and a decrease in solution temperature. This effect is also concentration dependent. The higer the amount of PEG 6000 added, the shorter the gelation and solution temperature range become.

Key words: Gelation temperature, Solution temperature, Pluronic F-127, PEG 6000.

Synthesis of Isoquinoline Analogues Modeled after Higenamine

Chi-Ming Chen* and Chi-Fang Lo**

Graduate Institute of Pharmaceutical Sciences, Taipei Medical College
and
National Research Institute of Chinese Medicine
Taipei, Taiwan, Republic of China

(Received July 29, 1989)

ABSTRACT

Demethylcoclaurine (higenamine) (Ia), a potent cardiotonic alkaloid, was isolated from Aconiti root as a racemic mixture. Previously, (-)-highenamine was demonstrated to have a stereoselective preference over (+)-higenamine in both beta-1 and beta-2 adrenergic activities. This paper reports the structure-activity relationship study on the several analogues modeled after higenamine and the evaluations on the beta adrenergic activities. Following the usual synthetic procedures for benzylisoquinolines and phenylisoquinolines by Bischler-Napieralski and Pictet-Spengler reactions, seven compounds (Ib-Ih) were prepared and then tested on left atria and tracheal muscle of guinea pig to evaluate their cardiac stimulation and tracheal relaxation activity. All the compounds except Id were either inactive or less active than natural higenamine. Compound Id was shown to have better activity in tracheal dilation than higenamine. In addition, compound Ib and Ic were demonstrated to possess a weak beta adrenergic blocking effect. In conclusion, a catechol moiety is presumably to be essential for its activity and substitution of the p-hydroxybenzyl group at C-1 position with correct stereochemistry in the isoquinoline molecule makes a great contribution to the activation of beta adrenergic receptors.

Key words: Higenamine, Isoquinoline analogues, Adrenergic β_1 & β_2 activity.

J Obstet Gynacol ROC 29(1); 32, 1990

The Epidemiologic Factors of Female Cervical Chlamydia Trachomatis Infection

Chun-Sen Hsu, Shou-Zung Liang, *Yan-Jyu Tsai, *Duen-Suey Chou,
**Tong H. Chang, An-Chiun Chen
Obstetrics & Gynecology Department,
Taipei Medical College Hospital
**School of Pharmacology of Taipei Medical College*
***Development Center For Biotechnology*

ABSTRACT

The prevalence of cervical infection with chlamydia trachomatis was examined in 480 sexually active women visiting the outpatient clinics of Taipei Medical College Hospital from March 1987 to February 1988.

The risk factors such as age, socioeconomic status, contraceptive methods, and menstrual phases were evaluated. In this studies, the prevalence of chlamydial infection in 480 women studied was 14.6%. The highest age prevalence was at 41-50 age bracket ($P<0.01$). Oral contraceptives was probably a risk of factor ($P<0.05$). Near half (45.7%) of patients with positive immunofluorescence was asymptomatic. Education, occupation, and menstrual phases were not significantly associated with chlamydial infection ($P>0.1$).

Key words: Cervical, chlamydia trachomatis

Arch Gen Psychiatry. 47; 313-319, 1990

Alcoholism–North America and Asia: A Comparison of Population Surveys With the Diagnostic Interview Schedule

John E. Helzer, Glorisa J. Canino,
Eng-Kung Yeh, Roger C. Bland,
Chung Kyoon Lee, Hai-Gwo Hwu,
Stephen Newman.

ABSTRACT

The Diagnostic Interview Schedule (DIS) is a highly structured instrument that enables lay examiners to gather the clinical information necesary to generate psychiatric disorders according to the DSM-III, Feighner, and Research Diagnostic Criteria. It was developed originally as the diagnostic interview for the Epidemiologic Catchment Area (ECA) survey. Beacuse it adheres to DSM-III and can be used by lay interviewers, thus making it practical for studies involving large samples, it has been used for other population surveys in North and South America, Europe, and Asia. This investigation compares the epidemiology of DSM-III-defined alcohol abuse and addiction in DIS-based population surveys cross-nationally (in St Louis, Mo; Edmonton, Canada; Puerto Rico; Taipei City, Taiwan; and South Korea). We found considerable variation in the lifetime prevalence of alcoholism but a similarity in the age of onset, the symptomatic expression, and the associated risk factors. We also found an inverse correlation between the prevalence of alcoholism and the strength of the association of the risk factors we examined. The work described herein demonstrated the utility of consistent definition and method in cross-cultural psychiatric research. The substantive findings have implications for the definition of alcoholism and for a better understanding of genetic and environmental interactions in its etiology.

Acta Psychiatr Scand 82; 374-380, 1990

Alcoholism among Taiwan aborigines defined by the Chinese Diagnostic Interview Schedule: a comparison with alcoholism among Chinese

Hai-Gwo Hwu, Yuan-Lih Yeh, J-D Wang,
Eng-Kung Yeh.

ABSTRACT

The prevalence of alcoholism was reported to be 0.1% in an aboriginal study on Taiwan using the census survey method in the 1950s. This study adopted a modified Chinese Diagnostic Interview Schedule to determine the prevalence of DSM-III-defined alcohol abuse (AA) and alcohol dependence (AD) in the Atayal, Paiwan and Yami ethnic groups of Taiwan aborigines. Stratified random sampling was used. The sample sizes of Atayal, Paiwan and Yami were 793, 656 and 106 respectively. The prevalence rates of DSM-III-defined AA and AD were 11.6%, 11.4% and 14.2%; and 9.0%, 8.1% and 6.4% respectively. No significant difference was found between the 3 ethnic groups. These prevalence figures are significantly higher than those for Chinese. In this comparative analysis, 2 distinct etiological hypotheses are proposed for the AA and the AD.

J. Neurolinguistics 5(1); 83-104, 1990

Lifetime Prevalence of Cognitive Impariment by Chinese Modified NIMH Diagnostic Interview Schedule Among the Elderly in Taiwan Communisties.

Eng-Kung Yeh, Hai-Gwo Hwu, Ly-Yung Chang,
Yuan-Lih Yeh.

ABSTRACT

Lifetime prevalence of cognitive impairment by Chinese-Modified NIMH Diagnostic Interview Schedule (DIS-CM) among the community population aged 65 and over in Taipei City, 2 townships and rural villages, are: 2.8%, 12.9% and 12.9% for definitely mild; 1.6%, 9.0% and 5.4% for definitely mild and possibly severe; and 1.3%, 9.6% and 1.8% for definitely severe cases, respectively. The prevalences increase with age in both sexes. In general, prevalence rates are higher in females than males with some inconsistent differences between severity of impairment and age-groups in each of three sites. High rates of errors in and/or refusal of three specific questions in both cases and non-cases are noteworthy. Whether this indicates the limitations of the DIS-CM in case identification of cognitive impairment in the elderly in Chinese community population deserves further study. The lower rate of severe cognitive impairment among the elderly in urban than that in riral areas as indcated in this study is in accord with the NIMH ECA Studies which adopted the similar case-finding method, and also with two recent studies in Taiwan which used the different case-identification method.

Acta Psychiatr Scand 82; 295-298, 1990

Risk Factors of alcoholism in Taiwan Chinese: an epidemiological approach.

Hai-Gwo Hwu, Eng-Kung Yeh, Yuan-Lih Yeh

ABSTRACT

This study investigated the risk factors of alcohol abuse and alcohol dependence, as defined by DSM-III criteria, in 11,004 Chinese subjects in the Taiwan community. Risk factors were analyzed using chi-square and multivariate logistic regression statistics. The logistic regression shows that the risk factors of alcohol dependence include male having bad childhood or adulthood behavior problems; of alcohol abuse include male, having had childhood or adulthood behavior problems, non-metropolitan community, age cohort, job-holder. The etiological models proposed are biological for Chinese alcohol dependence and interactional for Chinese alcohol abuse.

中華精神醫學七十九年第四卷第三期206-213頁

以簡易高效液相層析法測定多種抗精神病藥物之臨床應用

吳和生、張文和、葉英堃

選取haloperidol, flupenthixol, clopenthixol, fluphenazine, clothiapine, loxapine, chlorpromazine, trifuloperazine, thioridazine, clozapine, thiothixene, penfluridol, pimozide及sulpiride等14種抗精神病藥物，分別加入無藥物血漿(drug free plasma)中，以固相萃取試管(solid phase extraction tube)萃取，並使用高效液相層析儀配以PCN逆相層析分離管及電化檢測器測試分析。其中haloperidol, flupenthixol, clopenthixol, fluphenazine clothiapine, loxapine及clozapine等7種藥物可用上述方法測定，敏感度介於0.5～2ng/ml之間，回收率(以10ng/ml測定)則爲68.5～96.5%。其餘7種藥物則因層析波峯出現太早或太晚，敏感度不夠或干擾物太多而不適合以本法測定。本研究又曾選擇18位願意合作之住院精神病人，分別服用haloperidol, flupenthixol, clopenthixol, loxapine, fluphenazine, chlorpromazine, trifluoperazine及sulpiride等8種抗精神病藥物兩週後，實際抽血測其血中藥物濃度，結果顯示，在適當的條件下，包括確知服用何種藥物，且無併用兩種以上之抗精神病藥物，可使用本法，以單一萃取步驟及同一分析方法來測定haloperidol, flupenthixol, clopenthixol, loxapine及fluphenazine等5種抗精神病藥物之血中濃度。

Biol Psychiatry 27; 510-518, 1990

Plasma Catecholamine Metabolites in Schizophrenics; Evidence for the Two-Subtype Concept

Wen-Ho Chang, Teny-Yi Chen, Shi-Kwang Lin, For-Wei Lung, Wen-Long Lin, Wei-Herng Hu, Eng-Kung Yeh

ABSTRACT

Plasma homovanillic acid (pHVA) and plasma methoxyhydroxyphenyl glycol (pMHPG), as well as plasma haloperidol, were measured in 33 schizophrenic patients before and during 6 weeks of haloperidol treatment. Good responders had higher baseline pHVA values compared with poor responders (17.4±8.8 ng/ml, n=22 versus 11.4±5.0 ng/ml, n=11, $p<0.05$). A higher than 15 ng/ml pretreatment pHVA level was associated with a more consistent clinical response to the subsequent treatment. Differential pHVA changes during treatment were also found between good and poor responders. Within the good responder group, a significant decline in pHVA over time was found. By contrast, pHVA showed a trasnient increase in the poor responder group. Plasma MHPG changes showed a similar pattern during treatment in good responders, although no significant differences in baseline values were found between the good (n=13) and poor (n=9) responders, and pMHPG showed no change during treatment in poor responders. Significant correlations between baseline pHVA and pMHPG values were found in 22 patients. Good responders and poor responders did not differ significantly in term of age, duration of illness, severity of presenting symptoms, haloperidol dose, or plasma drug concentration. Two hypothetical subtypes of schizopherenia and both dopamine and norepinephrine systems involved in schizophrenic pyschopathology are proposed.

台灣醫誌 89; 504-507, 1990

健康國人鋰濃度指數之體外研究

楊庸一、葉英堃、陳朝灶、鄧惠泉、吳和生

鋰離子在紅血球的傳遞方式及其臨床意義，自70年代初期，即逐漸受到廣泛的注意。70年代末期，已較清楚地找出鋰離子在紅血球的細胞膜中，共有4個傳遞管道，包括：(1)Li^+—Na^+ exchange, (2)anion exchange, (3)Na^+—K^+ pump, (4)不受藥物控制的"leak"〔1—6〕。其中Li^+—Na^+ exchange被認爲是影響鋰濃度指數(紅血球內鋰濃度.細胞外鋰濃度)之最主要因素，同時，亦是經由遺傳來決定〔7—10〕。

鋰濃度指數在臨床上的意義，從70年代中期至末期，曾就下列三個層面受到廣泛探討：(1)作爲情感性疾病生物指標(biological marker)的可能性之探討〔7，11—14〕。(2)與臨床療效間關係的探討〔15—18〕。(3)與神經毒性副作用相關之探討〔19—20〕。到80年代初期，上述三方面之爭論逐漸增加，尤其前二者，其所可能代表的各種意義，亦逐漸模糊〔21，22〕。不過，由於Li^+—Na^+ exchange被認爲受遺傳控制，因此對此方面障礙所顯示的可能意義及研究方向，仍然受到注意〔23—28〕。事實上，生物精神醫學中有關鋰濃度指數的研究，已對紅血球中離子傳遞方式及管道的瞭解，提供了相當多的知識，也引起了其他科系的興趣〔29—30〕。有關這方面的探討，初步集中在高血壓等病人的探討上〔31，32〕。

鋰鹽的研究，尤其稍偏向基礎的研究，在國內相當少。本研究的目的，主要在於透過體外模式(in vitro method)來初步瞭解國人鋰濃度指數之狀況，以做爲未來有關各種疾病之比對參考，亦可做爲藥物交互作用體外模式的研究參考。

Neuroscience Res 8; 21-28, 1990

Neuropeptide Y (NPY) inhibits dimethylphenylpiperazinium (DMPP)-induced gastric acid secretion in isolated rat stomach

Li Hsueh Tsai[1] and Juei-Tang Cheng[2]

[1]*Department of Physiology, Taipei Medical College, Taipei and* [2] *Department of Pharmacology, College of Medicine, National Cheng Kung University, Tainan (Taiwan. R. O. C.)*

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ABSTRACT

The effct of neuropeptide Y (NPY) on gastric acid secretion was investigated on an everted preparation of isolated rat stomach. Perfusion with synthetic NPY did not modify the basal secretion of gastric acid. However, NPY reduced dimethylphenylpiperazinium (DMPP)-stimulated acid secretion at concentrations insufficient to affect acid secretion stimulated by muscarine, histamine or gastrin. The decrease in acetylcholine (ACh) release from postganglionic cholinergic neurons by NPY is therefore considered to be responsible. Determination of NPY content by radioimmunoassay, in mucosal and muscular layers of the stomach, indicated that NPY possibly produces cholinergic inhibition under physiological levels. The present study suggests, therefore, that NPY has the ability to inhibit the release of ACh from postganglionic cholinergic neurons, thus producing a decrease in gastric acid secretion.

Key words: Neuropeptide Y (NPY); Cholinergic inhibition; Histamine; Gastric acid secretion: Isolated rat stomach

Pharmacology 40; 157-164, 1990

Cholinergic Mechanisms in the Rat's Hypothalamus Mediate the Stimulatory Effect of Thyrotropin-Releasing Hormone on Gastric Secretion

Y. C. Yu[a], K. L. Shen[b], M. T. Lin[c]

[a]*Department of Physiology, Taipei Medical College, Taipei, Taiwan, ROC;* [b]*Department of Surgery, Tri-Service General Hospital and National Defenes Medical Center, Taipei, Taiwan, ROC;* [c]*Department of Physiology, National Cheng Kung Univserity Medical College, Tainan, Taiwan, ROC*

ABSTRACT

To assess the possible involvement of cholinergic mechansisms in the hypothalamic nuclei in the stimulatory effect of TRH on gastric secretion, rats were infused with thyrotropin-releasing hormone (TRH), cholinergic agonist or antagonist, and no normal saline through previously implanted hypothalamic cannulae. Administration of TRH or pilocarpine into the lateral cerebral ventricle or the anterior hypothalamus caused a dose-related increase in gastric volume and acidity in rats. On the other hand, administration of either atropine or D-tubocurarine into the same brain sites casused the oposite effects. Furthermore, the stimulatory effect of TRH or pilocarpine on gastric secretion was completely abolished by pretreatment of the CSF or the anterior hypothalamus with atropine and to a lower degree, D-tubocurarine. Adminsitration of TRH, pilocarpine, atropine or D-tubocurarine into the lateral hypothalamus produced only a slight effect on gastric volume and acidity. However, the gastric volume or acidity was not affected by administration of either TRH, pilocarpine, atropine or D-tubocurarine into the ventromedial hypothalamus in our rats. The data indicate that the cholinergic muscarinic receptor mechanisms in the anterior hypothalamus may mediate the stimulatory effect of TRH on gastric secretion in rats.

Key Words. Hypothalamus. Thyrotropin-releasing hormone. Cholinergic receptors. Gastric secretion. Pilocarpine. Atropine. D-Tubocurarine

J Chinese Nutrition Society 15; 11-22, 1990

臺灣產常用菇類之營養成份分析及其對田鼠脂質代謝效應之探討

謝明哲[1]　曾瓊慧[2]　鄭心嫻[1]

[1]臺北醫學院保健營養學系

[2]文化大學家政研究所

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摘　要

本實驗之目的在分析臺灣產香菇、木耳、金針菇等之營養成份，並以動物實驗探討菇類食品對田鼠血清及肝臟脂質代謝之效應。結果以香菇所含之粗蛋白質最高，但香菇之蛋白質氮量亦高，故眞正蛋白質以金針菇較高；香菇、木耳的第一限制胺基酸爲含硫胺基酸，而金針菇則爲異白胺酸。總膳食纖維質含量以木耳 49.2% 爲最高，香菇 48.0% 次之，金針菇 36.0%最少，且此三種菇類均以非水溶性非纖維素多醣類含量最多。餵食四週之結果，添加三種菇類之飼料餵食田鼠四週均具有顯著降低血清及肝臟膽固醇、總脂質、和低密度脂蛋白膽固醇之效果 ($P<0.01$)，且會增加血清總膽固醇中高密度脂蛋白膽固醇所佔之比例 ($P<0.01$)；三種菇類彼此間並無顯著差異性($P>0.01$)且其效果無法達到與正常對照組相似；血清三酸甘油酯僅有香菇及金針菇具有降低效果($P<0.05$)。至於餵食八週則三種菇類均不影響血清及肝臟中脂質之含量($P>0.01$)，此可能因田鼠會隨著年齡增長而產生自發性高膽固醇血症及脂肝之現象。

J Formosan Med Assoc 89; 519-25, 1990

Determination of Erythrocyte Glutathione Peroxidease Activity and Its Reference Range in Chinese Adults

SUNG-LING YEH[1], SHEW-JEN WU[2], MING-JER SHIEH[1] and KWANG-JEN HSIAO[2]

School of Nultrition and Health Science[1], Taipei Medical College; Taipei, Clinical Bichemistry Research Laboratory[2], Dept. of Medical Research, Veterans General Hospital, Taipei.

ABSTRACT

A method to assess selenium status of the body by measuring glutathione peroxidase activity in erythrocytes was studied. Reaction was measured by continuous monitoring of the decrease of NADPH at 340 nm. The erythrocyte glutathione peroxidase activity was dtermined at 37°C, pH 7.5 using one of the substrates, t-butyl hydroperoxide, to initiate the reaction, and using glutathione reductase as the coupling enzyme. The Km of the enzyme for glutathione and t-butyl hydroperoxide were determined to be 1.8 mM and 238 μM, respectively. The enzyme was stable at -20°C or -70°C for at least 5 months, and for at least 2 months when stored at 4°C. The within-run and between-run coefficients of variation for this method were 3.3-4.9% and 3.0-7.1%, respectively. The test was linear up to 100 U/g hemoglobin, and had a sensitivity of 0.002 $\triangle$ A/min at 3 U/L. The reference range of erythrocyte glutathione perodidase in Chinese adults was estimated to be 28.6-87.8 U/g hemoglobin (n=84), without a significant difference in the results between males and females.

Key words: selenium deficiency, glutathione peroxidase, reference range

J Biomed Lab Sci 1; 23-31, 1990

Erythocyte Glutahione Peroxidase Activity In Normal Chinese and in Patients with Inherited Metabolic Disease

SUNG-LING YEH[1], SHEW-JEN WU[2], MING-JER SHIEH[1], KWANG-JEN HSIAO[2]*

School of Nutrition and Health Science[1], Taipei Medical College, Taipei, Taiwan, R. O. C.
Clinical Biochemistry Research Laboratory[2], Dept. of Medical Research, Veterans General Hospital; Taipei, Taiwan, R. O. C.

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ABSTRACT

Glutathione peroxidase (GSH-PX; EC 1.11.1.9) is a selenoenzyme. Many studies had confirmed the correlation between GSH-PX and Selenium (Se) status in the body. Erythrocyte GSH-PX can be used as a good indicator for body Se status. In this study, the reference ranges of GSH-PX activity in Chinese infants (at 3 to 5 days and at 4 weeks after birth), children (1-10 years) and adults (20-78 years) were estimated to be 19.4-49.3 (U/g hemoglobin), 24.7-43.3, 25.6-56.0, and 28.1-87.8, respectively. There were no differences between the erthrocyte GSH-PX activity of infants and that of children, but the enzyme activity of adults was higher than that of either infants and children. The erythrocyte GSH-PX activity of 11 patients with different inherited amino acid metabolic disorders were also analyzed. Results showed that the erythrocyte GSH-PX activity in the patients with or without dietary treatment were all within nommal reference range. No Se-deficient symptom was found in these patients. This indicates that local Chinese foods, in combination with special formulas used in dietary treatment, can meet the Se requirement of patients with restricted dietary therapy.

Keywords: Glutathione peroxidase, inhertied metabolic disease, refernce range.

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Effect of Escherichia coli Free-Endotoxin on Zinc Uptake in Rats

Cheng-Chuang Tseng(曾金章), E-E Chang*(張怡怡)
Huey-Suey Cheng*(陳慧穗) and Hung-Jung Liu**(劉鴻榮)
Department of Microbiology and Immunology, Analytical Chemistry and Physicology**, Taipei Medical College*

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ABSTRACT

Escherichia coli free-endotoxin was intraperitoneally injected to the rats 14 days and 35 days after they were administered with 1,000 ppm zinc deionized water. The animals were supplied with standard diet ad libitum. The results showed that free-endotoxin significantly increased the zinc concentration in moist internal organs as compared with those of the control group. No significant difference in the zinc level of internal organs was noted between the 14-day and the 35-day groups. There might be a definite upper limit for the zinc storage of the host. This was not influenced by the duration of either zinc or free-endotoxin administered. Besides promoting zinc untake in the internal organs, free-endotoxin also increased metallothionein production in the liver and kidney of the host, while not in the least affecting either renal or hepatic function in the presence of such a high zinc content.

Key words: Free-endotoxin, Zinc uptake, Hepatic and renal functions, Metallothionein, Escherichia coli.