

Digestive Disorders

ABSTRACTS

- Axon AT, 1993. *Helicobacter pylori* infection.
- Deshpande G, 1999. Repeat charcoal hemoperfusion treatments in life threatening carbamazepine overdose.
- Fintelmann V, 1996. Antidyspeptic and lipid-lowering effects of artichoke leaf (*Cynara scolymus*) extract. Results of clinical studies into the efficacy and tolerance of Hepar-SL forte involving 553 patients.
- FitzGerald DE, 1979. Relief of chronic arterial obstruction using intravenous brinase. A control study.
- Held C, 1992. Artischocke bei Gallenwegsdyskinesien. Neue Aspekte zur Therapie mit Choleretika.
- Howell E, 1985. *Enzyme Nutrition: The Food Enzyme Concept*.
- Ivanovics G, 1947. Isolation and properties of raphanin, an antibacterial substance from radish seed.
- Kawasaki C, 2000. Charcoal hemoperfusion in the treatment of phenytoin overdose.
- Kirchhoff R, 1994. Increase in choleresis by means of artichoke extract. Results of a randomized placebo-controlled double-blind study.
- Kupke D, 1991. An evaluation of the choleric activity of a plant-based cholagogue.
- Leyck S, 1985. Improvement of the gastric tolerance of non-steroidal anti-inflammatory drugs by polyene phosphatidylcholine (Phospholipon 100).
- Mourelle M, 1996. Polyunsaturated phosphatidylcholine prevents stricture formation in a rat model of colitis.
- Percival M, 1985. *Nutritional Pearls*
- Prahoveanu E, 1987. [Immunomodulation with natural products. I. Effect of an aqueous extract of *Raphanus sativus niger* on experimental influenza infection in mice]
- Rachman B, 1997. Unique features and application of non-animal derived enzymes.
- Richmond BL, 2001. Compensatory phospholipid digestion is required for cholesterol absorption in pancreatic phospholipase A(2)-deficient mice.
- Schneider MU, 1985. Pancreatic enzyme replacement therapy: comparative effects of conventional and enteric-coated microspheric pancreatin and acid-stable fungal enzyme preparations on steatorrhoea in chronic pancreatitis.
- Tso P, 1981. Role of biliary phosphatidylcholine in the absorption and transport of dietary triolein in the rat.
- Wakabayashi H, 1998. Effect of *Helicobacter pylori* infection on gastric mucosal phospholipids contents and their fatty acid composition.
- Yeates PJ, 2000. Effectiveness of delayed activated charcoal administration in simulated paracetamol (acetaminophen) overdose.
- Helicobacter pylori* infection.**

Axon AT. Gastroenterology Unit, General Infirmary, Leeds, UK.

J Antimicrob Chemother 1993 Jul;32:61-68

The discovery of *Helicobacter pylori* is arguably the most significant advance made in gastroduodenal pathology this century. It is the most important cause of chronic gastritis, and almost certainly the major aetiological factor responsible for duodenal ulcer and probably for gastric ulcer as well. Evidence is accumulating which suggests that it may play an important role in the pathogenesis of gastric cancer. *H. pylori* is thought to be transmitted by the faecal-oral route or possibly oral-oral route, with iatrogenic transmission also reported. The prevalence of *H. pylori* infection increases with age, is commonest in developing countries, in certain ethnic minorities and those in lower socio-economic and educational groups. The organism can be eradicated using combinations of antibiotics; when treatment is successful inflammatory changes resolve, duodenal ulcers heal and do not subsequently recur.

Repeat charcoal hemoperfusion treatments in life threatening carbamazepine overdose.

Deshpande G, Meert KL, Valentini RP. Department of Pediatrics, Children's Hospital of Michigan, Wayne State University School of Medicine, Detroit, MI 48201, USA.

Pediatr Nephrol 1999 Nov;13(9):775-777

A 16-month-old female experienced a massive carbamazepine ingestion resulting in a peak serum carbamazepine concentration of 55 microg/ml. Clinical manifestations included generalized seizures, coma, shock, and gastrointestinal hypomotility. Gut decontamination was attempted using multiple-dose activated charcoal and cathartics. Because of the severity of illness, charcoal hemoperfusion was initiated. The patient underwent three sessions of charcoal hemoperfusion, each utilizing a fresh cartridge, with one session immediately following the other. Serum carbamazepine and carbamazepine-10,11-epoxide concentrations decreased from 54 microg/ml to 23 microg/ml, and 30 microg/ml to 17 microg/ml, respectively, during charcoal hemoperfusion. There were no complications. The patient recovered completely and was discharged on the 4th hospital day. Charcoal hemoperfusion should be considered for life-threatening carbamazepine intoxication, especially when drug-induced gastrointestinal hypomotility prevents elimination via the gut.

Antidyspeptic and lipid-lowering effects of artichoke leaf (*Cynara scolymus*) extract. Results of clinical studies into the efficacy and tolerance of Hepar-SL forte involving 553 patients.

Fintelmann V Z. Allg. Med. 72:48, 1996.

No abstract.

Relief of chronic arterial obstruction using intravenous brinase. A control study.

FitzGerald DE, Frisch EP, Milliken JC Scand J Thorac Cardiovasc Surg 1979;13(3):327-32

A therapeutic trial using placebo or the thrombolytic enzyme brinase was carried out in a group of patients with chronic arterial obstruction. The patients were observed for 3 months before receiving six intravenous infusions of either saline or brinase over a period of 2 weeks. Ankle blood pressure, Doppler ultrasound scanning, and arteriography were used to establish diagnosis in the patients. No changes were observed during the 3-month pre-observation period. After six brinase infusions, recanalization of 17 out of 27 obstructed arterial segments was recorded and the number of patent segments increased from 11 to 27. No improvement was observed in the placebo-treated patients. The differences between brinase and placebo treatment was statistically significant.

Artischocke bei Gallenwegsdyskinesien. Neue Aspekte zur Therapie mit Choleretika.

Held C

Z. Klin. Med. 47:92, 1992.

No abstract.

Enzyme Nutrition: The Food Enzyme Concept.

Howell E. Wayne, NJ; Aver' Publishing Group, 1985 Percival M. Nutritional Pearls (vol 35)

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Isolation and properties of raphanin, an antibacterial substance from radish seed.

Ivanovics G., Horvath S.

Proc Soc Exp Biol Med 1947; 66:625-31.

No abstract.

Charcoal hemoperfusion in the treatment of phenytoin overdose.

Kawasaki C, Nishi R, Uekihara S, Hayano S, Otagiri M. Department of Pharmacy, Japanese Red Cross Kumamoto Hospital, Faculty of Pharmaceutical Sciences, Kumamoto University.

Am J Kidney Dis 2000 Feb;35(2):323-326

In the case of phenytoin, a drug that is generally highly protein bound, there is a lack of consensus on the use of charcoal hemoperfusion in cases of overdose. We performed charcoal hemoperfusion on a phenytoin-overdosed patient to assess the effectiveness of this treatment. The plasma concentrations of total and free phenytoin fell rapidly, from 40.0 microg/mL and 3.6

microg/mL to 16.2 microg/mL and .5 microg/mL, respectively, after 3 hours of hemoperfusion. The total phenytoin elimination half-life was 3.9 hours. The fraction of protein-bound phenytoin was constant (90.8% +/- 0.5%) before, during, and after the procedure. The relations between the in vitro protein binding and adsorption of phenytoin to activated charcoal were also examined. Interestingly, bound phenytoin was found to dissociate from plasma proteins in the presence of activated charcoal and subsequently became adsorbed to the activated charcoal. Considering that phenytoin is bound to albumin with a large number of binding sites (n = 6) and a small binding constant (K = 6 x 10³/mol/L), the extent of adsorption to activated charcoal may depend on the magnitude of the binding constant of the drug to plasma proteins. The current results suggest that charcoal hemoperfusion is effective for the removal of drugs that bind to plasma proteins with a low binding constant.

Increase in choleresis by means of artichoke extract. Results of a randomized placebo-controlled double-blind study.

Kirchhoff R, Beckers C, Kirchhoff GM, Trinczek-Gartner H, Petrowicz O, Reimann HJ

Phytomedicine 1: 107, 1994.

No abstract.

An evaluation of the choloretic activity of a plant-based cholagogue.

Kupke D, von Sanden H, Trinczek-Gartner H, Lewin J, Blumel G, Reimann HJ

Z. Allg. Med. (67): 1046, 1991

No abstract.

Improvement of the gastric tolerance of non-steroidal anti-inflammatory drugs by polyene phosphatidylcholine (Phospholipon 100).

Leyck S, Dereu N, Etschenberg E, Ghyczy M, Graf E, Winkelmann J, Parnham MJ.

Eur J Pharmacol 1985 Oct 29;117(1):35-42

The effect of co-administration with polyene phosphatidylcholine (Phospholipon 100) on the oral gastrototoxicity of various non-steroidal anti-inflammatory drugs (NSAIDs) was studied in the rat. The highly unsaturated phospholipid reduced gastric mucosal lesions measured 3.5 h after oral administration of aspirin, indomethacin, phenylbutazone, diclofenac, piroxicam and sudoxicam to rats which had received a 3 day bread diet followed by 24 h fasting. The extent of reduction of gastrototoxicity varied amongst the individual NSAIDs. Phospholipon 100 also reduced gastric lesions induced by 3 day oral piroxicam and diclofenac administration. A trend towards reduction of oral diclofenac gastrototoxicity was observed following intravenous Phospholipon 100 administration. Phospholipon 100 H (100% saturated phosphatidylcholine) was less effective than Phospholipon 100 in improving acute gastric tolerance to oral phenylbutazone, diclofenac and piroxicam. Administration of the NSAID-Phospholipon 100 combination produced little change in the anti-inflammatory activities of diclofenac on carrageenan paw oedema and diclofenac and piroxicam on adjuvant arthritis in the rat. Combination with Phospholipon 100 offers a novel means for reducing the gastric side-effects of NSAID therapy.

Polyunsaturated phosphatidylcholine prevents stricture formation in a rat model of colitis.

Mourelle M, Guarner F, Malagelada JR. Digestive System Research Unit, Hospital General Vall d'Hebron, Autonomous University of Barcelona, Spain.

Gastroenterology 1996 Apr;110(4):1093-1097

BACKGROUND & AIMS: Polyunsaturated phosphatidylcholine stimulates collagen breakdown in experimental models of liver cirrhosis. Bowel strictures are characterized by excess deposition of collagen in the intestinal wall. The aim of this study was to investigate the effect of polyunsaturated phosphatidylcholine in the prevention of bowel strictures. **METHODS:** Colitis was induced by trinitrobenzenesulfonic acid. On day 21, the presence of strictures was assessed in control rats, rats with colitis, and phosphatidylcholine-fed (100 mg/day) rats with colitis. Furthermore, serum transforming growth factor beta1, collagen deposition, and collagenase activity in colonic tissue were measured in all groups. **RESULTS:** None of the control rats but 12 of 16 rats with colitis developed colonic strictures. In contrast, only 2 of 15 phosphatidylcholine-fed rats with colitis showed strictures. Collagen content was much higher in rats with colitis than in phosphatidylcholine-fed rats with colitis and control rats. Phosphatidylcholine-fed rats showed significantly higher collagenase activity in colonic tissue than rats with colitis and control rats. In an ancillary study, free linoleic acid-fed rats showed no differences when compared with rats with colitis. Stimulation of transforming growth factor beta1 was similar in all rats with colitis. **CONCLUSIONS:** Oral supplementation with polyunsaturated phosphatidylcholine prevents

the accumulation of collagen in inflamed intestinal tissue and the formation of strictures. This effect is associated with an enhanced collagen catabolism.

Nutritional Pearls, Volume 35 1985.

Percival, M.

East Rutherford, NJ: Avery.

[Immunomodulation with natural products. I. Effect of an aqueous extract of *Raphanus sativus niger* on experimental influenza infection in mice] [Article in French]

Prahoveanu E, Esanu V.

Virologie 1987 Apr-Jun;38(2):115-20

A *Raphanus sativus niger* water extract was administered by intranasal instillations to mice before inoculation of the influenza virus A/PR 8/34 (H1N1) strain by the same route. The extract ensured some protection against the experimental influenza infection. A significant decrease of the hemagglutinin titre of the mouse lung homogenate was noted, as well as a decrease of the mortality rate and a significant increase of the rate of survival as compared to the untreated controls.

Unique features and application of non-animal derived enzymes.

Rachman, B.

Clin. Nutr. Insights 1997; 5(10): 1-4.

No abstract available

Compensatory phospholipid digestion is required for cholesterol absorption in pancreatic phospholipase A(2)-deficient mice.

Richmond BL, Boileau AC, Zheng S, Huggins KW, Granholm NA, Tso P, Hui DY. Department of Pathology and Laboratory Medicine, University of Cincinnati College of Medicine, 231 Albert Sabin Way, Cincinnati, Ohio 45267-0529, USA.

Gastroenterology 2001 Apr;120(5):1193-1202

BACKGROUND AND AIMS: Numerous studies have suggested phospholipid inhibition of dietary cholesterol absorption through the gastrointestinal tract. This study addressed the importance of luminal phospholipid hydrolysis in this process. **METHODS:** The effect of phospholipase inhibition on cholesterol transport from intestinal lumen to the lymphatics was evaluated in lymph fistula rats. Cholesterol and phospholipid absorption efficiency in intact animals was evaluated in control and phospholipase A(2) (PLA2) gene-targeted mice. **RESULTS:** The PLA2 inhibitor FPL 67047XX retarded cholesterol absorption in a lymph fistula rat model. Under basal chow-fed dietary conditions, cholesterol absorption efficiency from a single bolus meal, and plasma lipid levels, were similar among PLA2+/+, PLA2+/-, and PLA2-/- mice. Interestingly, the nonhydrolyzable phospholipid dioleoyl ether phosphatidylcholine suppressed cholesterol absorption by 10% to 18% in mice without regard to their PLA2 genotype. When 1-palmitoyl-2-[(14)C]oleoyl-phosphatidylcholine was used as the substrate, the radiolabeled phospholipid was found to be hydrolyzed and absorbed with equal efficiency in PLA2+/+, PLA2+/-, and PLA2-/- mice. **CONCLUSIONS:** These results suggested that although phospholipid digestion in the intestinal lumen is a prerequisite for efficient cholesterol absorption, additional enzyme(s) can compensate for pancreatic PLA2 in catalyzing phospholipid digestion and facilitating cholesterol absorption in PLA2 knockout mice.

Pancreatic enzyme replacement therapy: comparative effects of conventional and enteric-coated microspheric pancreatin and acid-stable fungal enzyme preparations on steatorrhea in chronic pancreatitis.

Schneider MU, Knoll-Ruzicka ML, Domschke S, Heptner G, Domschke W

Hepatogastroenterology 1985 Apr;32(2):97-102

The therapeutic effectiveness of a conventional (Pankreon-Granulat) and an acid-protected (Kreon) porcine pancreatic enzyme preparation, and an acid-stable fungal enzyme preparation (Nortase) in the treatment of severe pancreatogenic steatorrhea was investigated. The study comprised 17 patients with chronic pancreatitis and exocrine pancreatic insufficiency with (A) or without (B)

a previous Whipple's procedure (B II resection + partial pancreatectomy). With all three enzyme preparations, a significant (p less than 0.05) reduction in the total faecal fat excretion/day was achieved. In therapy group A, this reduction was, on average, 58% for Kreon (100,000 U lipase/day), 67% for Pankreon-Granulat (360,000 U lipase/day) and 54% for Nortase (75,000 U lipase/day), the respective figures for therapy group B being 58%, 52% and 46% at identical dosages. Thus, in both groups, the effect produced by the conventional porcine pancreatic enzyme preparation and the acid-protected porcine or the acid-stable fungal enzyme preparation was largely equivalent, although the latter two preparations were administered at only 1/4 of the dosages of the former preparation. On the basis of the respective average reduction in total faecal fat excretion and average number of stools/day, it would appear that in patients with chronic pancreatitis and prior Whipple's procedure, Pankreon-Granulat should be administered for enzyme replacement while in patients with an intact upper gastrointestinal tract, Kreon should be administered, in the treatment of steatorrhoea in chronic pancreatitis.

Role of biliary phosphatidylcholine in the absorption and transport of dietary triolein in the rat.

Tso P, Kendrick H, Balint JA, Simmonds WJ.

Gastroenterology 1981 Jan;80(1):60-65

This study was undertaken to determine the role of luminal phosphatidylcholine in the intestinal absorption and transport of glycerol trioleate in the rat. Rats with bile and thoracic duct lymph fistulas were infused with a bile salt-stabilized emulsion of glycerol trioleate only or with either dioleoyl or dipalmitoyl phosphatidylcholine added. Uptake of infused lipid was greater than 95% in all groups. The presence of supplemental phosphatidylcholine in the infusate greatly enhanced the lymphatic triglyceride and phosphatidylcholine outputs in the bile-diverted rats as compared with rats without phosphatidylcholine supplementation. There was no difference in lipid outputs between the dioleoyl or dipalmitoyl phosphatidylcholine-supplemented rats. The fatty acid pattern of the lymph phosphatidylcholine of the two groups of phosphatidylcholine-supplemented rats reflected that of the added phosphatidylcholine. In the absence of luminal phosphatidylcholine there was increased accumulation of mucosal triglyceride and evidence suggesting increased portal transport of absorbed fatty acid. Therefore, this study demonstrated that the presence of luminal phosphatidylcholine is important for the normal lymphatic transport of the absorbed digestion products of triglyceride, the major dietary fat.

Effect of Helicobacter pylori infection on gastric mucosal phospholipids contents and their fatty acid composition.

Wakabayashi H, Orihara T, Nakaya A, Miyamoto A, Watanabe A. Third Department of Internal Medicine, Faculty of Medicine, Toyama Medical and Pharmaceutical University, Japan. hwaka-tym@umin.u-tokyo.ac.jp

J Gastroenterol Hepatol 1998 Jun;13(6):566-571

To investigate the effect of *Helicobacter pylori* infection on the 'gastric mucosal barrier', phospholipid contents and the fatty acid composition of endoscopic biopsy specimens of the gastric mucosa were analysed in healthy volunteers with and without *H. pylori* infection. The gastric corporeal phosphatidylcholine (PC) content of *H. pylori*-positive healthy volunteers was less than that of *H. pylori*-negative healthy volunteers (< 0.05). Moreover, *H. pylori*-positive healthy volunteers had a decrease in linoleic acid composition (< 0.0001) and an increase in arachidonic acid composition (< 0.0001) and in the arachidonic acid/linoleic acid ratio (< 0.0001) of antral and corporeal PC compared with *H. pylori*-negative healthy volunteers. These findings suggest that *H. pylori* infection enhances production of various eicosanoids, resulting in changes in the gastric mucosal phospholipid contents and their fatty acid composition, that may consequently cause the gastric mucosal barrier to be weakened.

Effectiveness of delayed activated charcoal administration in simulated paracetamol (acetaminophen) overdose.

Yeates PJ, Thomas SH. Wolfson Unit of Clinical Pharmacology, University of Newcastle upon Tyne, Newcastle, UK.

Br J Clin Pharmacol 2000 Jan;49(1):11-14

AIMS: Oral activated charcoal is used to treat drug overdose and is effective at reducing drug absorption when administered within 1 h of drug ingestion. There are fewer data on efficacy when the delay is longer, as is the case in most drug overdoses. This study investigated the efficacy of activated charcoal at preventing paracetamol (acetaminophen) absorption after simulated overdose when administration was delayed between 1 and 4 h. **METHODS:** An open randomized-order four-way crossover study was performed in healthy volunteers comparing the effect of activated charcoal 50 g on the absorption of 3 g paracetamol tablets when administered after an interval of 1, 2 or 4 h or not at all. Plasma paracetamol concentrations were measured over 9 h after paracetamol ingestion using h.p.l.c. and areas under the curve between 4 and 9 h (AUC(4,9 h)) calculated as a measure of paracetamol absorption. **RESULTS:** Activated charcoal significantly reduced paracetamol AUC(4,9 h) when administered after 1 h (mean reduction 56%; 95% Confidence intervals 34, 78; < 0.002) or 2 h (22%; 6, 39; < 0.03) but not after 4 h (8%; -8, 24). When administered after 1 h activated charcoal reduced individual plasma paracetamol concentrations significantly at all times between 4 and 9 h after paracetamol administration. Administration at 2 or 4 h had no significant effect. **CONCLUSIONS:** These results in healthy volunteers

cannot be extrapolated directly to poisoned patients. However, they provide no evidence of efficacy for activated charcoal when administered after an interval of more than 2 h.

DIGESTIVE DISORDERS

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- > Neue experimentelle Erkenntnisse zur Wirkung von Artischockenblatterextrakt.
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 - > Untersuchungen über den Einfluss eines Artischockenextraktes auf die Serumlipide in Hinblick auf die Arterioskleroseprophylaxe.
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 - > The suppression of the N-nitrosating reaction by chlorogenic acid.
 - > Antioxidant activity of polyphenolics in diets.
 - > Prüfung der choleretischen Aktivität eines pflanzlichen Cholagogums.
 - > Choleretic and cholesterol lowering properties of two artichoke extracts.
 - > Wirkungen der *Cynara scolymus*-Extrakte auf die Regeneration der Rattenleber.
 - > Dicafeoylquinic and dicafeoyltartaric acids are selective inhibitors of human immunodeficiency virus type 1 integrase.
 - > Inhibitory effect of chlorogenic acid on methylazoxymethanolacetate-induced carcinogenesis in large intestine and liver of hamsters.
 - > Regressive effects of various chemopreventive agents on azoxymethane-induced aberrant crypt foci in the rat colon.
-

Relief of chronic arterial obstruction using intravenous brinase. A control study.

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Scand J Thorac Cardiovasc Surg 1979;13(3):327-32

A therapeutic trial using placebo or the thrombolytic enzyme brinase was carried out in a group of patients with chronic arterial obstruction. The patients were observed for 3 months before receiving six intravenous infusions of either saline or brinase over a period of 2 weeks. Ankle blood pressure, Doppler ultrasound scanning, and arteriography were used to establish diagnosis in the patients. No changes were observed during the 3-month pre-observation period. After six brinase infusions, recanalization of 17 out of 27 obstructed arterial segments was recorded and the number of patent segments increased from 11 to 27. No improvement was observed in the placebo-treated patients. The differences between brinase and placebo treatment was statistically significant.

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Unique features and application of non-animal derived enzymes.

Rachman B.
Clinical Nutrition Insights 1997; 5(10)

No abstract.

Enzyme Nutrition: The Food Enzyme Concept.

Howell E.
Wayne, NJ; Aver' Publishing Group,
1985 Percival M. Nutritional Pearls (vol 35)

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Hepatoprotective activity of polyphenolic compounds from *Cynara scolymus* against CCl₄ toxicity in isolated rat hepatocytes.

Adzet T, Camarasa J, Laguna JC
J Nat Prod. 50: 612, 1987.

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Die Artischocke - eine Heilpflanze mit Geschichte und zukunftperspektive.

Ernst E
Naturamed 10: 7, 1995.

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Antidyspeptische und lipidsenkende Wirkungen von Artischockenextrakt. Ergebnisse klinischer Untersuchungen zur Wirksamkeit und Verträglichkeit von Hepar SL Forte an 553 Patienten.

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Therapeutic profile and mechanism of action of artichoke leaf extract: hypolipemic, antioxidant, hepatoprotective and choleric properties.

Fintelmann V
Phytomed. 1996. Suppl 1: 50.

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Über die lipidsenkende Wirkung von Cynarin.

Frohlich E, Zigler W
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Artischockenblatterextrakt: In vitro Nachweis einer Hemmwirkung auf die cholesterin-Biosynthese.

Gebhardt R
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Antioxidative and protective properties of extract from leaves of the artichoke (*Cynara scolymus* L.) against hydro-peroxide-induced oxidative stress incultured rat hepatocytes.

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Toxicol Appl Pharmacol 144: 279-286, 1997

No abstract.

Inhibition of Cholesterol Biosynthesis in Primary Cultured Rat Hepatocytes by Artichoke (*Cynara scolymus* L.) Extracts.

Gebhart R
J Pharmacol Exp Ther 286: 3, 1998.

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Polyphenols and flavonoids as antioxidant and hepatoprotective principles of artichoke extracts.

Gebhardt R, Fausel M, Henke B
Cell Biology and Toxicology, 1996.

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Scavenging of peroxynitrite by a phenolic/peroxidase system prevents oxidative damage to DNA.

Grace SC, Salgo MG, Pryor WA
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Über den Einfluss von cynarin auf hyperlipidämien unter besonderer Berücksichtigung des types II (hypercholesterinämie).

Hammerl H, Kindler K, Kranzl C, Nebosis G, Pichler O, Studlar M
Wiener Med. Wschr. 41: 601-605, 1973.

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Über eine möglichkeit der kausalen Behandlung von Erkrankungen der Gallenwege mit einem Artischockenpreparat.

Hammerl H, Pichler O
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Untersuchungen über den Einfluss eines Artischockenextraktes auf die Serumlipide in Hinblick auf die Arterioskleroseprophylaxe.

Hammerl H, Pichler O
Wiener Med. Wschr. 109 (44): 853, 1959.

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Artischocke bei Gallenwegsdyskinesien. Neue Aspekte zur Therapie mit Choleretika.

Held C
Z. Klin. Med. 47:92, 1992.

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Chlorogenic acid and synthetic chlorogenic acid derivatives: novel inhibitors of hepatic glucose-6-phosphate translocase.

Hemmerle H et al
J Medicinal Chemistry 40(2): 137-45, 1997.

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Increase in choleresis by means of artichoke extract. Results of a randomized placebo-controlled double-blind study.

Kirchhoff R, Beckers C, Kirchhoff GM, Trinczek-Gartner H, Petrowicz O, Reimann HJ
Phytomedicine 1: 107, 1994.

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Effect of dietary caffeic and chlorogenic acids on in vivo xenobiotic enzyme systems.

Kitts DD, Wijewickreme AN
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Antioxidant activity of polyphenolics in diets.

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Prufung der choloretischen Aktivitat eines pflanzlichen Cholagogums.

Kupke D, von Sanden H, Trinczek-Gartner H, Lewin J, Blumel G, Reimann HJ:
Z. Allg. Med. (67): 1046, 1991

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Choleretic and cholesterol lowering properties of two artichoke extracts.

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Wirkungen der Cynara scolymus-Extrakte auf die Regeneration der Rattenleber.

Maros T et al.
Arzneim-Forsch/(Drug Res) 18: 184, 1966.

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