Flohsamenschalen

aus Wikipedia, der freien Enzyklopädie

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Flohsamenschalen sind die Samenschalen der Pflanze *Plantago ovata*. Sie werden unter dem Namen Indische Flohsamen als Lebensmittel und zu Heilzwecken vertrieben und zu diesem Zweck hauptsächlich in Indien und Pakistan angebaut.

Sowohl in der Therapie als auch als präventive und unterstützende Maßnahme haben sich Flohsamenschalen (Plantago ovata Samenschalen) als natürliches und effektives Darmregulans bewährt [1] Die pflanzlichen Ballaststoffe sind in der Lage, mehr als das 50-fache an Wasser zu binden. Diese Quellfähigkeit bewirkt im Darm eine Volumenzunahme des Stuhls und regt durch den entstehenden Druck auf die Darmwand die Peristaltik an damit den Reflex zur Darmentleerung aus. Somit wird die Motilität reguliert und das aufgenommene Wasser besitzt eine längere Transitzeit (Verweildauer) im Darm. Für das starke Quellverhalten sind sogenannte Flosine-Schleimpolysaccharide verantwortlich, die sich in den Samenschalen befinden. Die Samenschalen können sowohl bei Verstopfung als auch bei Durchfall helfen.

Für eine der ersten Arzneipflanzen überhaupt hat die Europäische Arzneimittelbehörde EMEA in London die Wirksamkeit und Sicherheit von Flohsamenschalen (Plantago ovata-Samenschalen) im Oktober 2006 in Form eines „EU Herbal Monograph“ bescheinigt. Eine große Metaanalyse aller klinischen Studien aus dem Zeitraum 1966 bis 2003, die sich mit der Frage beschäftigte, welche medikamentösen Therapien bei der chronischen Obstipation effektiv sind, ergab für Plantago-ovata-Samenschalen eine sichere Wirkung [2] Darüber hinaus liegen für Plantago-ovata-Samenschalen zahlreiche randomisierte kontrollierte Studien in den verschiedenen Indikationsgebieten mit signifikanten Ergebnissen vor, was insgesamt auf ein sehr hohes Evidenzniveau nach Kriterien der EBM (Evidence based medicine) schließen lässt. Konsistent damit ist die Einschätzung der EMEA, die für Plantago-ovata-Samenschalen den höchsten Evidenzgrad („Level of Evidence I“) für die Indikationen habituelle Obstipation, erleichterte Defäkation z. B. bei schmerzhaften Stühlen infolge Analfissuren, Hämorrhoiden, nach rektal-analen operativen Eingriffen sowie als adjuvante Therapieform bei Reizdarm und Hypercholesterinämie auswies.

Neben einer schonenden Darmregulation reinigen die löslichen Ballaststoffe auch den Darm von Fäulnisstoffen und Darmgasen, z. B. von krebserregenden Verdauungs-Endprodukten wie Indol, Skatol und Phenol. Flohsamen fördern auch das Wachstum darmfreundlicher Bakterien. Durch die Dickdarmbakterien werden die löslichen Ballaststoffe zu kurzkettigen Fettsäuren umgewandelt und diese sind dann in der Lage, die Cholesterin-Synthese in der Leber zu hemmen und somit den Cholesterinspiegel im Blut zu senken. Außerdem binden die löslichen Ballaststoffe der Flohsamen die fäkale Gallensäure, wodurch es in der Leber zu einer erhöhten Cholesterinausscheidung kommt. Im Darm wird dadurch mehr Cholesterin ausgeschieden. Die löslichen Ballaststoffe des Flohsamens sind nicht nur durch den bakteriellen Abbau im Dickdarm, sondern auch im Dünndarm wirksam.

Flohsamenschalen enthalten darüber hinaus wertvolle Schleimstoffe, die zu einer Lubrikationsschicht und einem verbesserten Gleiten des Darminhaltes führt, aber auch dazu, dass sich entzündliche Prozesse im Magen-Darm-Trakt schneller zurückbilden können, da die Verdauung von Schleimstoffen keine Belastung für die Darmschleimhaut ist. Insbesondere in der Remissionsphase bei chronisch entzündlichen Darmerkrankungen (Morbus Crohn, Colitis ulcerosa) haben Plantago-ovata-Samenschalen einen günstigen Einfluss auf die entzündungsfördernden Botenstoffe TNF-α und Stickstoffoxid (NO) und besitzen darüber hinaus noch einen schützenden Effekt auf die Darmmukosa.

Ein bedeutender Anwendungsvorteil im Vergleich zu den meisten chemischen Abführmitteln liegt in der ausgezeichneten Verträglichkeit, wodurch Plantago-ovata-Samenschalen über lange Zeit eingenommen werden können.

Flohsamenschalen werden auch auf Grund seiner Quellwirkung im Magen zur Unterstützung der Gewichtskontrolle und Adipositasbehandlung eingesetzt [3] Die Samenschalen führen durch die Zunahme des Volumens zur Sättigung und senken das Hungergefühl

Nachweise

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Einzelnachweise

1. ↑ Hensel A et al. Indische Flohsamenschalen. Eine alte Droge für moderne Zivilisationserkrankungen. DAZ 2001; 01/36: 55.
2. ↑ Ramkumar D et al. Efficacy and safety of traditional medical therapies for chronic constipation: systematic review. Am J Gastroenterol. 2005; 100: 936-971.
3. ↑ Moreno LA et al. Psyllium fibre and the metabolic control of obese children and adolescents. J Physiol Biochem. 2003; 59: 235-242.

Klinische Studien im Auszug:

1. Br J Nutr. 2007 Nov 16;:1-8 **The acute effects of psyllium on postprandial lipaemia and thermogenesis in overweight and obese men.Khossousi A**, **Binns CW**, **Dhaliwal SS**, **Pal S**.Department of Nutrition, Dietetics and Food Science, ATN Centre for Metabolic Fitness, School of Public Health, Curtin University, Perth, Western Australia 6102, Australia.Overweight and obesity is one of the risk factors for developing CVD. At present, very little is known about the acute effects of dietary fibre on lipids, glucose and insulin, resting energy expenditure and diet-induced thermogenesis in overweight and obese individuals. This study examined the postprandial metabolic effects of dietary fibre in overweight and obese men. Ten overweight and obese men consumed a mixed meal accompanied by either a high-fibre or low-fibre supplement on two separate visits, in a random order, 1 week apart. Two isoenergetic breakfast meals with similar composition were consumed by ten overweight/obese men. The meals contained either a low (3 g) or high (15 g) amount of fibre, low-fibre meal (LFM) and high-fibre meal (HFM) respectively. Analysis was carried out using paired t test and ANOVA. Serum TAG incremental area under the curve during 6 h of the postprandial period was significantly lower after the consumption of HFM compared with LFM. At the first hour of the postprandial period, plasma apo B48 concentration after consumption of HFM was significantly lower compared with LFM. The resting energy expenditure and diet-induced thermogenesis after both meals was similar during 6 h of the postprandial period. Collectively, these findings suggest that a single acute dose of dietary fibre in the form of psyllium supplement can decrease arterial exposure to TAG and modify chylomicron responses in the postprandial period.

2. Cardiol Rev. 2007 May-Jun;15(3):116-22. **Nutriceuticals in cardiovascular disease: psyllium.** **Petchetti L**, **Frishman WH**, **Petrillo R**, **Raju K**. Department of Medicine, Mt. Vernon Hospital, Mt. Vernon, New York, USA.In recent years, there has been a growing interest in the use of dietary fiber in health maintenance and disease prevention. A deficiency of fiber in the Western diet may be contributing to the current epidemics of diabetes mellitus, coronary artery disease (CAD), and colonic cancer. The awareness of fiber as a dietary supplement may have contributed to the reported 30% decline in death rate from CAD observed over the past 15 years. Psyllium is a soluble gel-forming fiber that has been shown to bind to the bile acids in the gut and prevent their normal reabsorption, similar to the bile acid sequestrant drugs. Psyllium is useful as an adjunct to dietary therapy (step 1 or step 2 American Heart Association [AHA] diet) in the treatment of patients with mild-to-moderate hypercholesterolemia. In combination with other cholesterol-lowering drugs, such as statins, psyllium provides an added benefit on cholesterol lowering, and is well tolerated and cost-effective.

3. Curr Treat Options Gastroenterol. 2006 Jul;9(4):314-23. **Current gut-directed therapies for irritable bowel syndrome.Chang HY**, **Kelly EC**, **Lembo AJ**. Beth Israel Deaconess Medical Center/Harvard University Medical School, 330 Brookline Avenue, Dana 501, Boston, MA 02215, USA. alembo@bidmc.harvard.edu. Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder that can present with a wide array of symptoms that make treatment difficult. Current therapies are directed at relieving symptoms of abdominal pain or discomfort, bloating, constipation, and diarrhea. Pharmacologic agents used to treat IBS-associated pain include myorelaxants, peppermint oil, and peripherally acting opiates. Dicyclomine and hyoscyamine, the two myorelaxants available in the United States, have not been proven effective in reducing abdominal pain in patients with IBS. The efficacy of peppermint oil is debated, but methodological problems with existing studies preclude definitive judgment. Loperamide is ineffective for relief of abdominal pain. For IBS patients with excessive abdominal bloating, a small number of studies suggest that bacterial eradication with gut-directed antibiotics and bacterial reconstitution with nonpathogenic probiotics may reduce flatulence. For constipation-predominant (C-IBS) symptoms, current treatment options include fiber supplementation, polyethylene glycol, and tegaserod. Soluble fibers (ispaghula, calcium polycarbophil, psyllium) are more effective than insoluble fibers (wheat bran, corn fiber) in alleviating global symptoms and relieving constipation, although fiber in general has marginal benefit in treatment of overall IBS symptoms. Polyethylene glycol increases bowel frequency in chronic constipation, but its overall efficacy against IBS is unclear. Tegaserod, a 5-HT(4) agonist, demonstrates superiority over placebo in improving bowel frequency and stool consistency and alleviating abdominal pain and bloating in women with C-IBS. Overall global symptoms are modestly improved with tegaserod when compared with placebo. Additional agents under investigation for C-IBS include the ClC(2) chloride channel opener lubiprostone, mu-opioid receptor antagonist alvimopan, and 5-HT(4) agonist renzapride. For diarrhea-predominant (D-IBS) symptoms, available therapies include loperamide, alosetron, and clonidine. Alosetron, a 5-HT(3) antagonist, is superior to placebo for reducing bowel frequency, improving stool consistency, and relieving abdominal pain in women with D-IBS. However, alosetron is available under a restricted license because of concerns for ischemic colitis and severe constipation necessitating colectomy. Clonidine may be helpful in alleviating global symptoms for D-IBS patients.

4. Br J Nutr. 2006 Jul;96(1):131-7. **Aqueous extracts of husks of Plantago ovata reduce hyperglycaemia in type 1 and type 2 diabetes by inhibition of intestinal glucose absorption. Hannan JM**, **Ali L**, **Khaleque J**, **Akhter M**, **Flatt PR**, **Abdel-Wahab YH**. School of Biomedical Sciences, University of Ulster, Coleraine BT52 1SA, Northern Ireland, UK. Plantago ovata has been reported to reduce postprandial glucose concentrations in diabetic patients. In the present study, the efficacy and possible modes of action of hot-water extracts of husk of P. ovata were evaluated. The administration of P. ovata (0.5 g/kg body weight) significantly improved glucose tolerance in normal, type 1 and type 2 diabetic rat models. When the extract was

administered orally with sucrose solution, it suppressed postprandial blood glucose and retarded small intestinal absorption without inducing the influx of sucrose into the large intestine. The extract significantly reduced glucose absorption in the gut during in situ perfusion of small intestine in non-diabetic rats. In 28 d chronic feeding studies in type 2 diabetic rat models, the extract reduced serum atherogenic lipids and NEFA but had no effect on plasma insulin and total antioxidant status. No effect of the extract was evident on intestinal disaccharidase activity. Furthermore, the extract did not stimulate insulin secretion in perfused rat pancreas, isolated rat islets or clonal beta cells. Neither did the extract affect glucose transport in 3T3 adipocytes. In conclusion, aqueous extracts of P. ovata reduce hyperglycaemia in diabetes via inhibition of intestinal glucose absorption and enhancement of motility. These attributes indicate that P. ovata may be a useful source of active components to provide new opportunities for diabetes therapy.

5. J Nutr. 2005 Oct;135(10):2399-404. **A diet supplemented with husks of Plantago ovata reduces the development of endothelial dysfunction, hypertension, and obesity by affecting adiponectin and TNF-alpha in obese Zucker rats.** **Galisteo M**, **Sánchez M**, **Vera R**, **González M**, **Anguera A**, **Duarte J**, **Zarzuelo A**.Department of Pharmacology, School of Pharmacy, University of Granada, 18071 Granada, Spain. mgalist@ugr.es. The aim of the present study was to analyze whether consumption of a fiber-supplemented diet containing 3.5% Plantago ovata husks prevented many of the abnormalities clustered in the metabolic syndrome, including obesity, dyslipidemia, hypertension and endothelial dysfunction. For this purpose, obese Zucker rats, a model of type 2 diabetes, and their lean littermates were studied. Rats consumed a standard control diet or that diet supplemented with 3.5% P. ovata husks for 25 wk. Body weights were measured weekly. Systolic blood pressure (SBP) was measured monthly. At the end of the treatment, plasma concentrations of triglycerides, total cholesterol, FFAs, glucose, insulin, adiponectin, and tumor necrosis factor alpha (TNF-alpha) were determined, and studies on vascular function were performed using aortic rings. Rats fed the P. ovata husk-supplemented diet had a significantly reduced body weight gain compared with those fed the standard diet. Decreased endothelium-dependent relaxation in response to acetylcholine (ACh) by aortic rings from obese Zucker rats was improved in those fed the fiber-supplemented diet. The greater SBP, higher plasma concentrations of triglycerides, total cholesterol, FFA, glucose, insulin, and TNF-alpha, and the hypoadinectinemia that occurred in obese Zucker rats that consumed the control diet were significantly improved in those fed the fiber-supplemented diet. We conclude that intake of a P. ovata husk-supplemented diet prevents endothelial dysfunction, hypertension, and obesity development, and ameliorates dyslipidemia and abnormal plasma concentrations of adiponectin and TNF-alpha in obese Zucker rats.

6. Phytomedicine. 2002 Jan;9(1):9-14. **Stevioside induces antihyperglycaemic, insulinotropic and glucagonostatic effects in vivo: studies in the diabetic Goto-Kakizaki (GK) rats.** **Jeppesen PB**, **Gregersen S**, **Alstrup KK**, **Hermansen K**.Department of Endocrinology and Metabolism C, Aarhus University Hospital, Denmark. pbj@mail-telia.dk. Extracts of leaves from the plant Stevia rebaudiana Bertoni have been used in the traditional treatment of diabetes in Paraguay and Brazil. Recently, we demonstrated a direct insulinotropic effect in isolated mouse islets and the clonal beta cell line INS-1 of the glycoside stevioside that is present in large quantity in these leaves. Type 2 diabetes is a chronic metabolic disorder that results from defects in both insulin and glucagon secretion as well as insulin action. In the present study we wanted to unravel if stevioside in vivo exerts an antihyperglycaemic effect in a nonobese animal model of type 2 diabetes. An i.v. glucose tolerance test (IVGT) was carried out with and without stevioside in the type 2 diabetic Goto-Kakizaki (GK) rat, as well as in the normal Wistar rat. Stevioside (0.2 g/kg BW) and D-glucose (2.0 g/kg BW) were administered as i.v. bolus injections in anaesthetized rats. Stevioside significantly suppressed the glucose response to the IVGT in GK rats (incremental area under the curve (IAUC): 648 +/- 50 (stevioside) vs 958 +/- 85 mM x 120 min (control); $P < 0.05$) and concomitantly increased the insulin response (IAUC: 51116 +/- 10967 (stevioside) vs 21548 +/- 3101 microU x 120 min (control); $P < 0.05$). Interestingly, the glucagon level was suppressed by stevioside during the IVGT, (total area under the curve (TAUC): 5720 +/- 922 (stevioside) vs 8713 +/- 901 pg/ml x 120 min (control); $P < 0.05$). In the normal Wistar rat stevioside enhanced insulin levels above basal during the IVGT (IAUC: 79913 +/- 3107 (stevioside) vs 17347 +/- 2882 microU x 120 min (control); $P < 0.001$), however, without altering the blood glucose response (IAUC: 416 +/- 43 (stevioside) vs 417 +/- 47 mM x 120 min (control)) or the glucagon levels (TAUC: 5493 +/- 527 (stevioside) vs 5033 +/- 264 pg/ml x 120 min (control)). In conclusion, stevioside exerts antihyperglycaemic, insulinotropic, and glucagonostatic actions in the type 2 diabetic GK rat, and may have the potential of becoming a new antidiabetic drug for use in type 2 diabetes.

7. Int J Pharm. 2007 Oct 24 **Psyllium and copolymers of 2-hydroxylethylmethacrylate and acrylamide-based novel devices for the use in colon specific antibiotic drug delivery.**
Singh B, **Chauhan N**, **Kumar S**, **Bala R**.**Department of Chemistry, Himachal Pradesh University, Shimla 171005, India.** In order to utilize the psyllium husk, a medicinally important natural polysaccharide, to develop the hydrogels meant for the drug delivery, we have prepared psyllium 2-hydroxylethylmethacrylate (HEMA) and acrylamide (AAm)-based polymeric networks by using N,N'-methylenebisacrylamide (N,N'-MBAAm) as crosslinker and ammonium persulfate (APS) as initiator. The polymeric networks thus formed [psy-cl-poly(HEMA-co-AAm)] were characterized with FTIR and swelling studies which were carried out as a function of crosslinker concentration, time, pH and [NaCl] of the swelling medium. The swelling kinetics of the hydrogels and in vitro release dynamics of model drug (tetracycline hydrochloride) from these hydrogels has been studied for the evaluation of swelling mechanism and drug release mechanism from the hydrogels. The values of the diffusion exponent 'n' have been obtained 0.5 for both swelling kinetics and drug release dynamics. This value shows that the Fickian type diffusion mechanism has occurred for the swelling of the polymers and for the release of drug from the polymers in different release mediums. The values of the initial diffusion coefficients (10.6x10(-4), 13.1x10(-4), 14.0x10(-4))cm(2)/min, average diffusion coefficients (22.2x10(-4), 25.7x10(-4), 27.0x10(-4))cm(2)/min and late diffusion coefficients (1.68x10(-4), 2.15x10(-4), 2.28x10(-4))cm(2)/min for the release of tetracycline HCl respectively in distilled water, pH 2.2 buffer and pH 7.4 buffer from the drug loaded samples shows that in the initial stages, the rate of release of drug from the hydrogels is slow and rate of diffusion of drug increases with time.