INTERNATIONAL
IV NUTRITIONAL THERAPY
GLOBAL PHYSICIAN EDUCATION

DMSO / MSM / Phospholipids & HCl

Advanced IV Therapy
by
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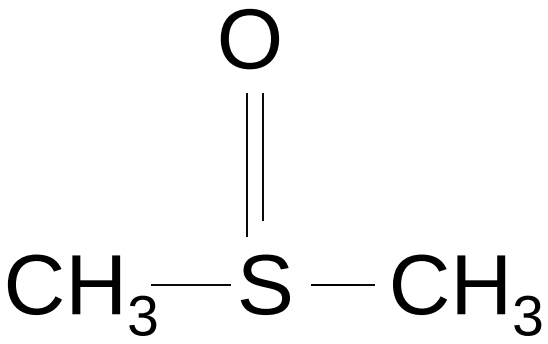
DMSO and MSM are formed in the atmosphere and return to earth in rainfall, then are taken up by plants and concentrated up to one hundred times. Both compounds are present in small amounts in certain fruits, grains, vegetables and beverages such as milk. All Commercially available DMSO and MSM are manufactured, since the small amounts in plants makes extraction impractical. It remains an indisputable fact that both molecules are found in nature and are therefore natural.

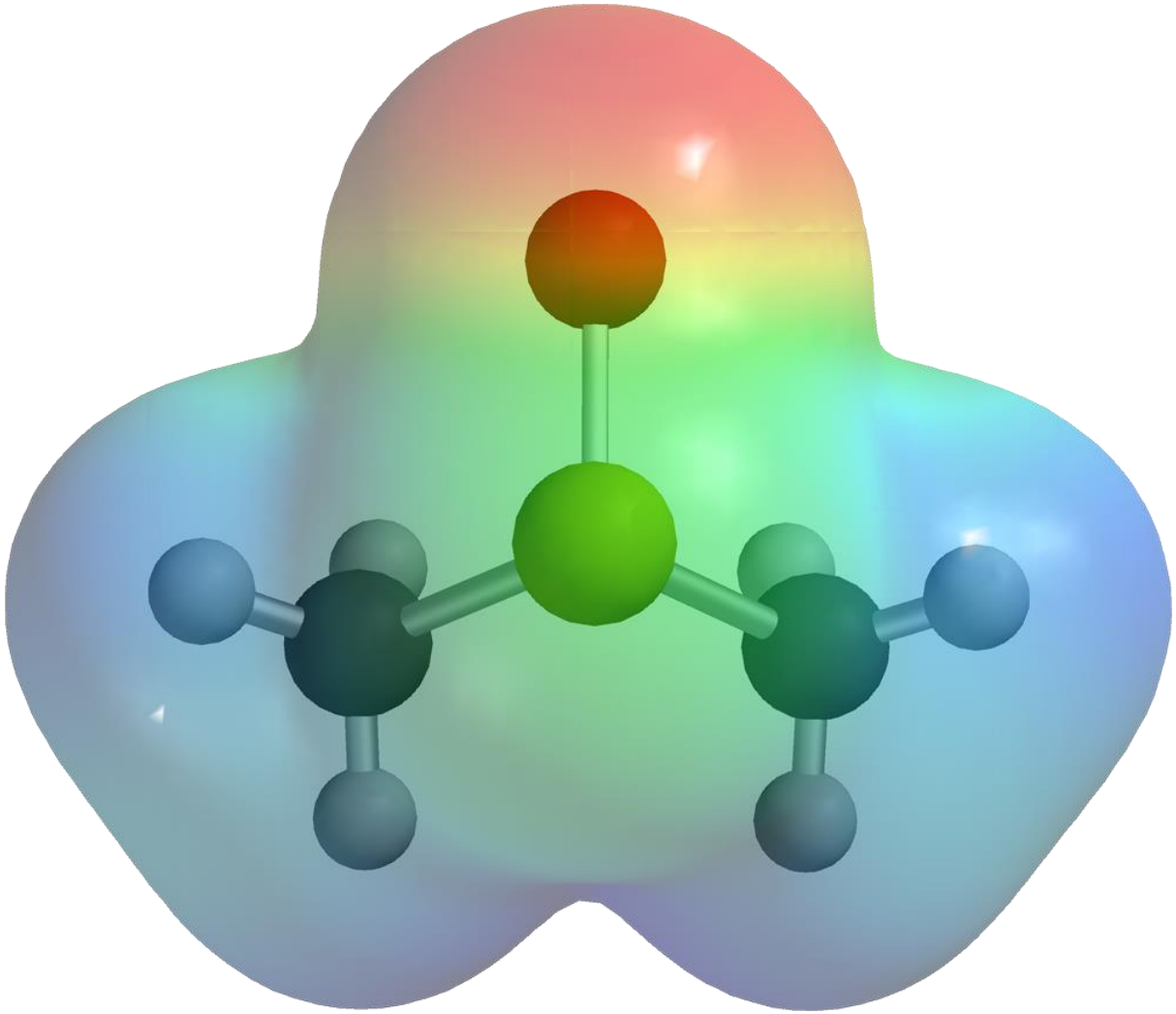
MSM and DMSO are naturally occurring sulfur compounds. They originate as an end product of the sulfur cycle that begins in the ocean. Algae and phytoplankton produce sulfur compounds know as tertiary dimethysulfonium salts, and these salts are transformed to dimethyl sulfide, DMS, a highly volatile compound. When exposed to ozone and high-energy ultraviolet light, DMS is converted into DMSO and MSM, both of which are water soluble

DMSO

Dimethyl Sulfoxide

DMSO Molecule





- DMSO is both water and lipid soluble
- An efficient solvent for water-insoluble compounds
- a hydrogen bond disrupter.
  - a hydrogen bond disrupter decreases inflammation by preventing or decreasing oxygen or hydrogen peroxide reactions with cellular structures

- Biological properties first introduced to the scientific community by Stanley W. Jacob, MD in 1963

- Potent anitoxidant and free-radical scavenger
- Anti inflammatory

    Prevents the oxidation of lipoproteins

- Anti- microbial, fungal, bacterial and viral
  Increases sensitivities to
  pharmaceuticals when used
  synergistically
  Enhances resistance and decreases
  susceptibility to infection
- Cholinesterase inhibition
- Cryoprotective

- Is metabolically converted to MSM within the body

Indications for DMSO

- Atherosclerosis
- Interstitial Cystitis
- Scleroderma
- Reynauds Disease
- Lupus (SLE)
- Rheumatoid Arthritis

- Degenerative Arthritis
- Ulcerative Colitis
- Chronic Obstructive Pulmonary Disease
- Reflex Sympathetic dystrophy
- Diabetic Ulcerations
- Burns
- Scar Tissue (increasing circulation)
  - Adjunct in Plastic Surgery

- Close Head injuries, edema
- Strokes- inhibits platelet aggregation
- Fibromyalgia, polymyalgia used in conjunction with MSM (DMSO2)
- Chronic prostatitis
- Dermatologic diseases
- Schizophrenia
- Alzheimer’s disease
- Chemical exposures (i.e. cholorform, bromobenzene)

DMSO and the Blood Brain Barrier

- DMSO is used in medicine as a BBB solvent to increase transportation of drugs across the BBB.
- It is often used with Chemo as well as HDIVC in brain cancers to increase transport across the BBB.
- DMSO is also potentially of value in reducing edema after CNS radiation.

Julian T. Hoff, Richard F. Keep, Guohua Xi and Ya Hua. *Effect of dimethyl sulfoxide on blood-brain barrier integrity following middle cerebral artery occlusion in the rat.* Acta Neurochirurgica Supplementum -Brain Edema XIII 10.1007/3-211-30714-1_55

Walker M. *Profile of the holistic cancer therapist W. Douglas Brodie, MD, HMD.* Townsend Letter for Doctors and Patients 2/1/2002

Side effects

- Characteristic odor described as sulfur, garlic and described as creamed corn
- Dry skin, itching, occasional burning

Potential side effects at high doses

- Nausea
- Vomiting
- Diarrhea
- Hemolysis
- Rashes
- Renal failure

- Hypertension
- Bradycardia
- pulmonary edema
- Bronchospasm
- Cardiac arrest
- Heart block
  - rarely
- Anaphylaxis
  (flushing and rashes) *

- * due to high concentration and rate of infusion
- Slow infusion rate, or give in a greater volume of NS or D5W at a slower rate

Treatment protocols

- Courtesy of Stanley Jacob, MD; Oregon Health & Science University (OHSU), Portland, Oregon

Treatment protocols

- Oral:
- 2%,
- 4% or
- 10% concentrations diluted in water

- Dosage: 1 teaspoon t.i.d. with meals

Treatment protocols

- Topical:
- Penetrates the cell membrane, causing an increase in osmolality both inside and outside the cell preventing any significant hemolysis due to the formation of an osmotic gradient

- 50% concentration diluted in water for head area
- 70% concentration diluted in water for all other body and extremity areas

- skin should be clean and dry
- apply 5-15 ml b.i.d. or q.i.d prn

- addition of urea (10%) reduces skin irritation and odor
- commercially available with a rose scent

- IV:
- Given in NS or D5W in less than 10% concentration
- Dosage should not exceed 0.3 gm/kg of body weight calibrating on a 70kg (150 lb) person

- *note that if >150lb or 70K the dosage does not exceed this amount

- 2 grams has been given successfully for closed head injuries or strokes (CVA)

- Administration: 1-5 times weekly over a 30 minute period for extended periods of time (months

Side effects:

- greater than 10% leads to hemolysis
- nausea due to high concentration and rate of infusion
- Slow infusion rate, or give in a greater volume of NS or D5W with a reduced rate of infusion.

Hoang BX, et.al. Dimethyl Sulfoxide–Sodium Bicarbonate Infusion for Palliative Care and Pain Relief in Patients With Metastatic Prostate Cancer. Journal of Pain & Palliative Care Pharmacotherapy. 2011;25:350–355. DOI: 10.3109/15360288.2011.606294

Prostate cancer (adenocarcinoma of the prostate) is the mostwidespread cancer in men. It causes significant suffering and mortality due to metastatic disease. The main therapy for metastatic prostate cancer (MPC) includes androgen manipulation, chemotherapy, and radiotherapy and/or radioisotopes. However, these therapeutic approaches are considered palliative at this stage, and their significant side effects can cause further decline in patients' quality of life and increase non–cancer-related morbidity/mortality. In this study, the authors have used the infusion of dimethyl sulfoxide–sodium bicarbonate (DMSO-SB) to treat 18 patients with MPC. The 90-day follow-up of the patients having undergone the proposed therapeutic regimen showed significant improvement in clinical symptoms, blood and biochemistry tests, and quality of life.

There were no major side effects from the treatment. In searching for new and better methods for palliative treatment and pain relief, this study strongly suggested therapy with DMSO-SB infusions could provide a rational alternative to conventional treatment for patients with MPC.

Hoang, et.al. Protocol:

Patients with pain score <3 points (VDS) were treated with infusion of 25 mL of 99.9% DMSO solution mixed with 250 mL of SB 1.4% solution and 10 mL of magnesium sulfate 1.5% (7 patients). Patients with pain score ≥3 points were treated with infusion of 40 mL DMSO mixed with 500 mL of SB 1.4% solution and 10 mL of magnesium sulfate 1.5% (11 patients).

Hoang, et.al. Protocol:

Patients with pain score that did not decrease in 3 days of treatment with infusion of 40 mL DMSO were recommended to receive a dose of 60 mL of DMSO mixed with 500 mL of SB 1.4% solution (2 patients). When the pain was completely under control, the dose of DMSO returned to 40 mL. The patients who were treated with 40 DMSO and achieved complete pain control had their dose of DMSO reduced by 5 mL after each cycle of infusion reaching a maintenance dose of 25 mL DMSO per day for the remaining cycles. The speed of drip was 40 to 60 drops per minute (mean: 50 drops per minute).

Hoang, et.al. Protocol:

- #1:
  - 42 mL 8.4% Bicarbonate
  - 208 mL Sterile Water
  - 25 mL 99% DMSO
  - 10 mL Magnesium Sulfate
  - 4 mEq Potassium Chloride
- #2:
  - 83 mL 8.4% Bicarbonate
  - 417 mL Sterile Water
  - 40 mL 99% DMSO
  - 10 mL Magnesium Sulfate
  - 6 mEq Potassium Chloride

Hoang, et.al. Protocol:

All patients received the full 12 cycles of five infusions. The patients with edema were treated with appropriate diuretics. Patients also were instructed to take 1000 mg of potassium orally if there was no evidence of kidney failure. During the treatment period, patients were allowed to take any medication, dietary supplements, vitamins, or herbs for any health disorders they were experiencing.

Hoang, et.al. Side effects:

- No high grade.
- There were nine episodes of transient mild headache and five episodes of moderate chilling during and after treatment. These side effects subsided and were resolved in 1 to 2 hours and all patients were able to continue with the next set of infusions. For these patients who experienced transient headache and episodes of chilling spell, we recommended slowing the drip rate to 30 drops per minute in the next infusion session.

Hoang, et.al. Outcomes:

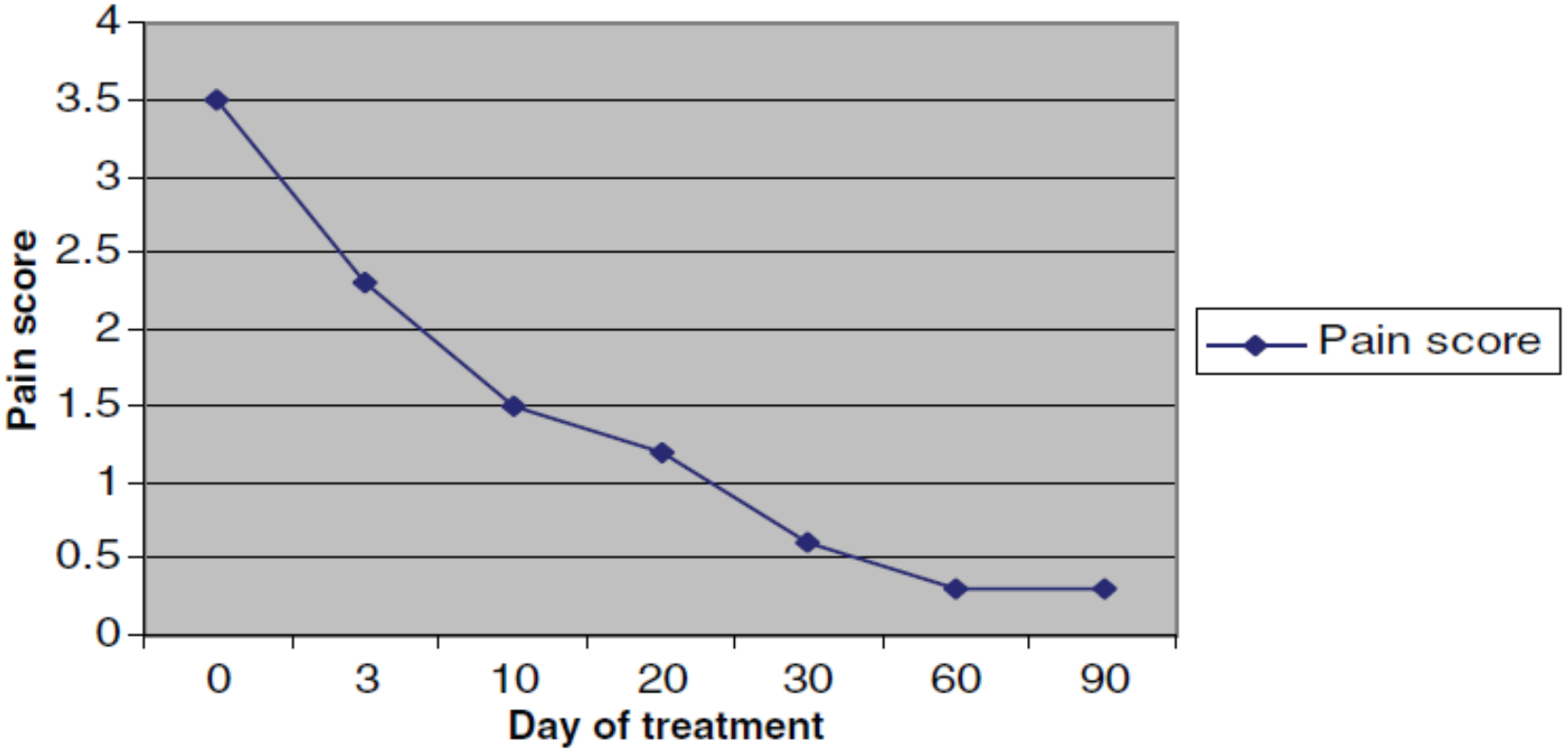


FIGURE 1. Reduction in pain from baseline during the treatment period.

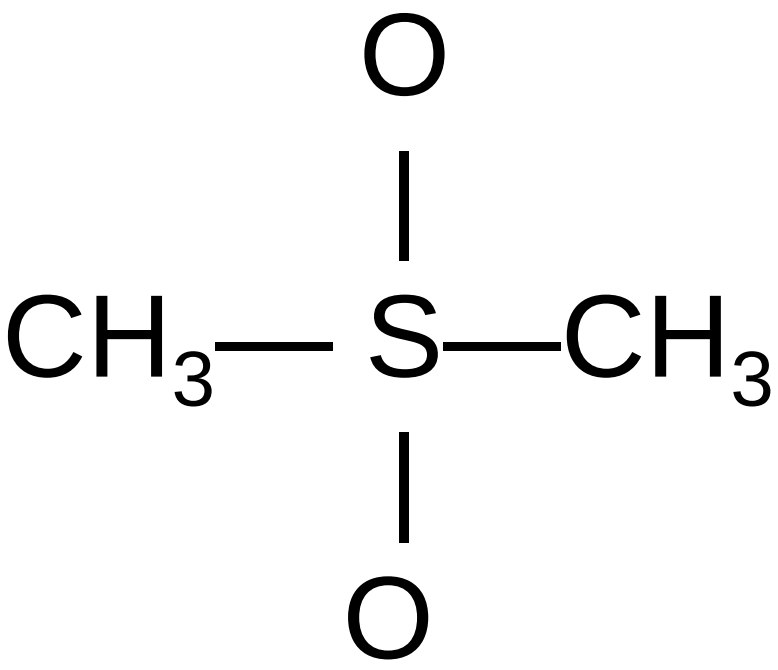
Hoang, et.al. Conclusions:

“The results of this open-label clinical study suggest that patients with MPC can be treated effectively and safely with DMSO-SB infusion. These agents can be produced inexpensively and used for the patients in and out of the hospital. The patients with MPC who were treated with DMSO-SB infusion had fast relief in two of the key symptoms—pain and urination outflow limitation. More importantly, DMSO-SB treatment substantially improved the patients’ quality of life without major negative effects on body and organ functions.”

MSM

Methylsulfonylmethane

MSM Molecule



- Pure commercial MSM is produced by reacting H_2O_2 with DMSO and then distilling off the impurities.
- MSM produced by crystallization often contains considerable impurities.

Toxicity

- The LD50 of MSM is so large that the value is meaningless when applied to this substance
- 18,000 patients have been treated at OHSU Hospital with doses up to 100 grams per day without serious side effects
- Long-term toxicity studies in rodents with oral doses of 8 g/kg/day showed no toxic effects.
  - The equivalent in humans would be 1.2 pounds per/d

Toxicity

- Acute oral toxicity studies used 20g/kg/d and no animals died
- LD50 study in rats found dose was ≥ 17g/kg body wt, equivalent to 2.6 lbs per day in humans
- Ocular and dermal irritancy was the lowest score that can be achieved by any compound.

Drug and Nutrient Interactions

- There have been no documented interactions between any pharmaceutical or nutraceutical compound and MSM
- May have an aspirin-like effect on platelet aggregation, but not as strong
  - Nausea reported in high doses (6-20,000mg)
- 6 reports of menorrhagia with MSM supplementation
- No significant interactions with vitamins, minerals, or botanicals have been reported.

MSM Protocols

Courtesy of Stanley Jacob, MD; Oregon Health & Science University (OHSU) Portland, OR

- **IV**
- 15% in deionized water, sterile for parenteral use, 100 ml
- 100 ml 15% MSM is admixed with 100 ml of D5W
- Administered over 12-15 min.
- Drip Rate: 15ml/min
  - To achieve this rate consider a 22-20g needle/catheter as this rate is not attainable with a 24g angiocath

- When adding MSM to other nutrients (Vits/Min), a rate suitable for the infusion of the other nutrients should be utilized, and this depends on their concentration within the IV and the resultant osmolarity

Protocols

- **Oral** MSM
- Liquid oral MSM is absorbed better than MSM in capsules
  - 15% in deionized water, 8 ozs.
- Dose: 1/5 tsps with breakfast and lunch
- Can be mixed with water, juice, milk and coffee.
- Do NOT mix with alcohol
- MSM increases GI motility, resulting in increased stool frequency, this decreases over time
  - Increase dose gradually
- > 100gms have been administered orally

Protocols

- **Topical** MSM gel
- 15% MSM
- 6-8 drops over painful areas bid
- Can be used hourly
- May leave a white residue on the skin
  - Remove with water
- Absorbed well topically
- Not a carrier/synergist like DMSO

Protocols

- **Urological**
- 15%, sterile, 50 ml
- Effective: intersitial cystitis, prosatitis, irritable bladder syndrome
- Instill with #10 french cath. With a 60 ml catheter tip syringe (trained professional)
- Pts can be self taught to perform this using a new sterile catheter each time
- Instilled MSM is retained in the bladder until the patient feels the urge to void
- Often retained over night if instilled at bedtime

Protocol

- **Trigger point injections**
- 5 ml IV MSM mixed with 5 ml 0.5% lidocaine
- Can be given s.c. or i.m.
- Inject trigger point or areas of pain 3 days per week

Indications for MSM

- **Scleroderma**
- If the patient has esophageal and internal organ involvement they should be started with five IV txs weekly for 6 weeks
- After 6 wks a noticeable improvement in swallowing solid foods is noted.
- Topical MSM gel several times weekly, oral as tolerated
- At 6 weeks, reduce to 2x/wk for several months increasing oral dose to tolerance

Indications for MSM

- **Rheumatoid arthritis**
- IV's 1-2x/wk quicker and better results
- Oral 1/5 tsps with breakfast and lunch
- Topical apply on affected area
- 2 months tx, reassess, may notice need to reduce pharm. txs

Indications for MSM

- Fibromyalgia
- Note: tx x 2 mos before benefit noticed
- IV treatments 5x week for 2 wks
  - Decrease to 2x wk for several months
- After 2 wks start oral and topical MSM
- Trigger pts as described

Indications for MSM

- Back Pain including Disogenic
- IV txs 5x week x 2 wks
  - Decrease to 2x wk for months as required

- Follow with oral and topical MSM
- Increase Oral as tolerated
- Trigger pts as indicated

Indications for MSM

- Interstitial Cystitis
  - 90% improvement with MSM when pt compliant with protocol
  - IV tx 5x week for 2 wks
    - Decrease to 2x wk for 2 monts
  - Oral tx concurrent with IV
    - 11/2 tsp 2 x/day increase as tolerated
  - Topical gel apply over pernieum/bladder

Indications for MSM

Interstitial Cystitis

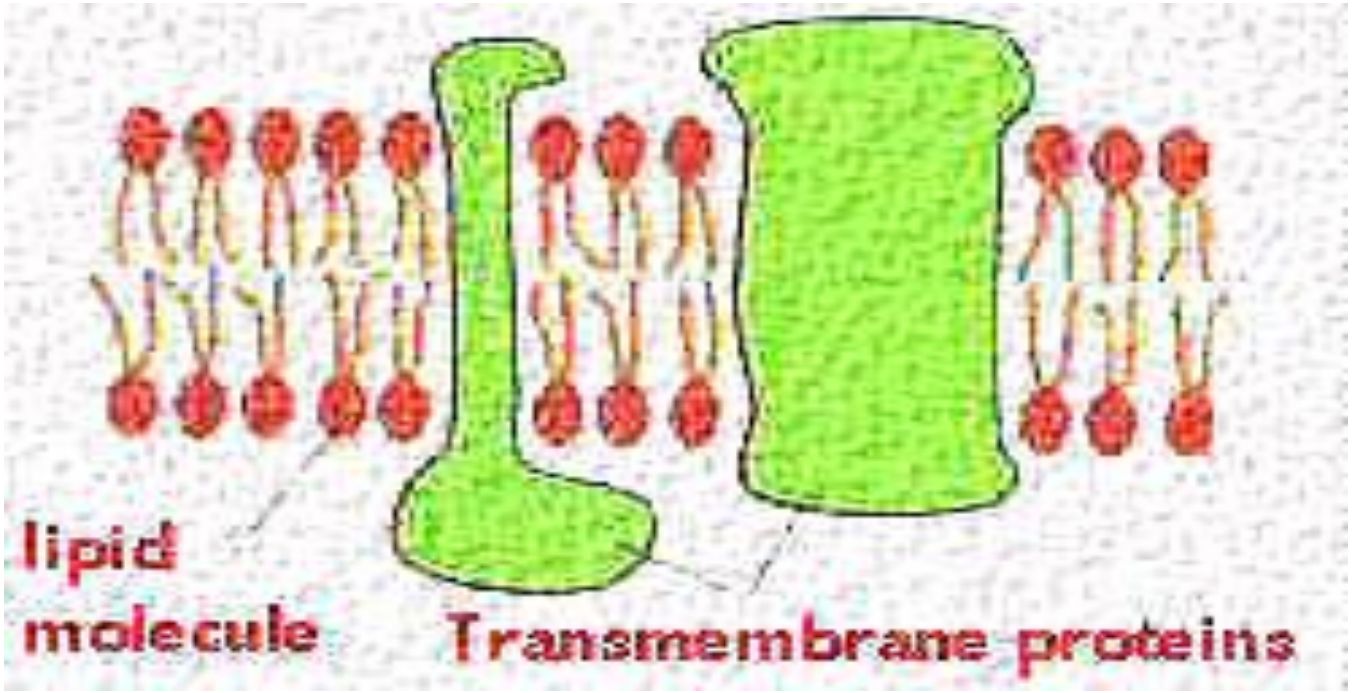
- Bladder Instillation Protocol
  - 50mls of 15% MSM 5x/wk x 1 month
  - 50mls of 15% MSM 4x/wk x 1 month
  - 50mls of 15% MSM 3x/wk x 1 month
  - 50mls of 15% MSM 2x/wk x 1 month
  - 50mls of 15% MSM 1x/wk x 1 month
  - 50mls of 15% MSM weekly thereafter

  - Do NOT stop irrigations until reasonable comfort level is obtained
    - Weekly tx prn/indefinitely

References

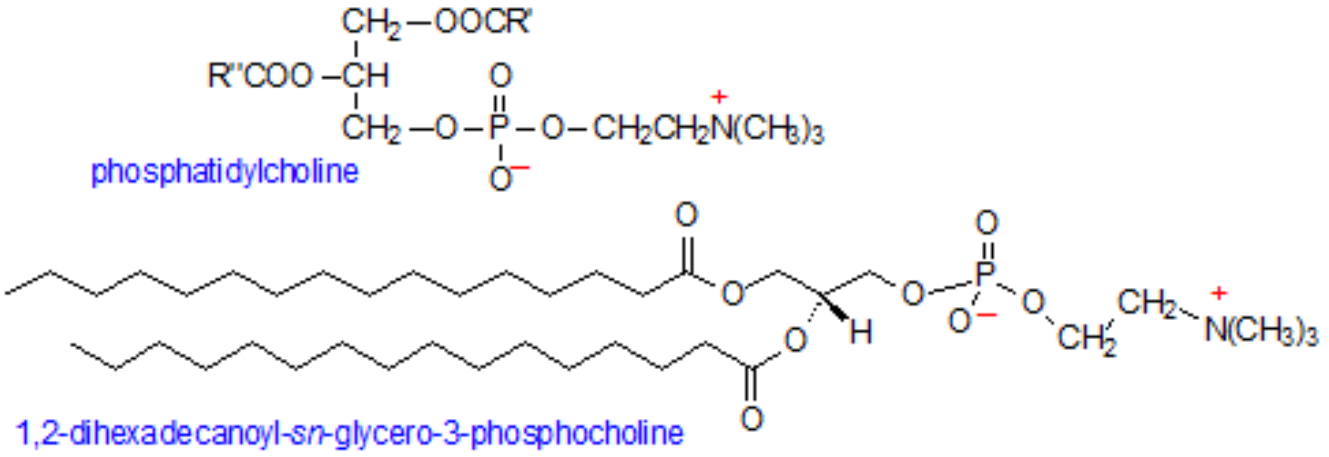
- MSM: the definitve guide. A Comprehensive Review of the Science and Therapeutics of methylsulfonylmethane. Stanley Jacob, MD and Jeremy Appleton, ND. Freedom Press, Topanga, CA, 2003
- Protocols on the Proper Administration of MSM. Stanley Jacob, MD. Oregon Health & Science University (OHSU), Portland, Oregon. 2003

Intravenous Phosphatidylcholine (PTC)



Cell Membrane Structure

- One of the main types of lipid in the cell membrane include the phospholipids. They have a polar head group and two hydrocarbon tails. An example is shown in the figure



Why is PC Therapy Needed?

- Aging causes detrimental changes in membrane phospholipid composition
- PC is the predominate head group in the outer layer of the membrane bi-layer
- PC associates with HUFAs, especially arachidonic acid
- Implication: outer layer has higher energy lipids than inner layer of membrane

Why is PC Therapy Needed?

- Cell membranes vary in relative amount of PC, sphingomyelin (SM) and cholesterol
- PC decreases with age, SM and cholesterol both increase with age
- Every cell in body is effected as well as the organelles within the cell
- PC decline limits the body's homeostatic ability by decreasing membrane fluidity

Phospholipid Exchange (PLX)

- PC infusion exchanges PC for SM, cholesterol
- Rat studies showed that PLX increased PC/SM and PC/cholesterol ratios
- PLX also lead to a decrease in cellular enzyme leakage when the cells were injured
- PLX reverses age-related changes in phospholipid composition of heart muscle cells

Phospholipid Exchange (PLX)

- Improves respiratory and cardiac function under conditions of depleted oxygen
- Aids detoxification of neurotoxins when combined with:
  - EFA therapy
  - Binding of toxic bile
  - Fast glutathione push

PLX & The Liver

- PLX was studied for its effect on liver damage
- Subjects categorized according to type of liver damage: fatty degeneration, acute or chronic inflammation & fibrosis
- Patients received IV PC 950 mg per treatment plus 450-700 mg oral PC
- IV PC continued until blood tests normalized
- All groups had marked benefit

PLX & The Liver

- Protects liver against damage from
  - Alcohol
  - Pharmaceuticals
  - Environmental toxins
  - Infections such as hepatitis
- Cirrhosis showed improved metabolic and detoxifying capacity

Research

- Hepatic disease – Vnitr Lek 2000 apr;46(4):199-204. 2 g daily for 2 weeks resulted in 50% decrease in ammonia levels in patients with cirrhosis and hepatic encephalopathy
- Hepatic disease – Med Monatsschrift 27:131-137, 1973. Essential phospholipids in the treatment of hepatic disease. 650 subjects with varying liver damage followed 5 years. Patients received 950 mg IV PC with 450-700 mg oral PC, when labs normalized received oral PC only. All groups benefited: reversal of fatty degeneration, acute inflammation recovery accelerated.
- Protects liver against damage from alcohol, pharmaceuticals, environmental toxins and zenobiotics as well as infection (viral, bacterial, fungal). Alcoholism Clin Exp Res 18:592-595, 1994.; Gastroent 106:152-159, 1994.; Clin Exp Res 23:5:944-949, May 1999.; Pathol Biol (Paris) 49(9):738-752, Nov 2001.; Am J Addict 10 Suppl:29-50, 2001.
- Cirrhosis: Marked improvement of liver function following PC administration in terms of an increase in metabolic and detoxifying capacity of liver was noted. Pogromov, AP et al. Klin. Med. (Moscow)10(1978)97.

PLX & Cardiovascular Disease

- Marked reduction of plasma cholesterol level
- Increased HDL cholesterol fraction
- Reduction in triglycerides and the atherogenicity index
- Lowered the microviscosity of high density lipoproteins – eased blood flow
- Decrease of the extent of chronic aorta damage in susceptible individuals – Aorta is susceptible to structural damage due to shear stresses caused by high blood flow velocity, this tendency is increased in endurance athletes

PLX & Cardiovascular Disease

- Enhanced the secretion of bile cholesterol
- Initial infusions resulted in transient increase in blood cholesterol as it was removed from atheromas and transported to liver
- Russion study showed that lipostabil forte (oral PC product) improved the functional activity of high-density lipoproteins in the reverse cholesterol transport. (N.Ozerova, et al. Simvastatin and Preparation of Polyunsaturated Phospholipids Produce Similar Changes in the Phospholipid Composition of High-Density Lipoproteins during Hypercholesterolemia . Bulletin of Experimental Biology and Medicine, Vol 139, No. 2, February 2005; 210-212.)

PLX & Cardiovascular Disease

- PC has been shown to improve the removal of cholesterol from vascular plaques. (Chung, BH, et al. Phosphatidylcholine-rich acceptors, but not native HDL or its apolipoproteins, mobilize cholesterol from cholesterol-rich insoluble components of human atherosclerotic plaques. Biochim Biophys Acta. 2005 Mar 21;1733(1):76-89.)

PLX & Cardiovascular Disease

- Treatment suggestions
- Alternate PLX infusions with EDTA chelation and vitamin/mineral replacement IVs
- Supplement p.o. Lipostabil Forte, ALA, vit D3
- Diet should be designed to reduce adverse CVD effects
  - Low sugar, restrict carbohydrates to no more than 150 grams daily
  - Protein intake at 0.5 gram/pound body weight
  - Beneficial fats sufficient to induce satiety: monounsaturated fats, saturated fats
  - Eliminate all seed oils – too high in omega-6

Research Indications

- May be indicated for the treatment of some manic conditions
- It may also be indicated in some with tardive dyskinesia
- Must be used early in brain conditions, has short therapeutic window
- A possible future role in cancer therapy is also suggested by recent research

Safety & Side Effects

- LD-50 not determined, e.g. no toxicity
- Chronic toxicity – test animals showed beneficial decrease blood lipids, mild increase in pancreatic size
- No teratogenicity
- Always make sure PC product and carrier solution are at room temperature prior to mixing – avoids precipitation
- Only mix PC with D5W, no other additives

Parenteral PC

- Disclaimer for CE Purposes
- Brand names of injectable PC are mentioned because they need to be administered according to different protocols
- IVNTP does not promote any specific brand or pharmacy making injectable PC

Closely related compound – Citicoline

- Cytidine 5'-diphosphocholine, CDP-choline, or citicoline is an essential intermediate in the biosynthetic pathway of structural phospholipids in cell membranes, particularly phosphatidylcholine
- Absorption p.o. is virtually complete, and bioavailability p.o.is approximately the same as intravenous administration
- Applications
    - inhibit mechanisms of apoptosis associated to cerebral ischemia
    - accelerate recovery from post-traumatic coma and neurological deficits
    - improved amnesic and cognitive disorders after HT of minor severity that constitute post-concussional syndrome
- Citicoline is a safe drug, as shown by toxicological tests conducted, has no significant systemic cholinergic effects, is a well tolerated product (Secades, J, Lorenzo J. Citicoline: pharmacological and clinical review, 2006 update. Methods Find Exp Clin Pharmacol. 2006 Sep;28 Suppl B:1-56.)

Parenteral PC Caution

- Phosphatidylcholine is compounded by a number of pharmacies in the U.S. for use in Mesotherapy. This is commonly 100 mg/mL concentration. This formulation can not be used for intravenous applications.

PTC

- PC 35mg/mL OR 50mg/ml, Sodium Deoxycholate 24mg/mL, Benzyl Alcohol 0.9% and Ethanol 0.2%.
- Basic protocol:
  - Increment dose and infuse over 90 minutes
  - 25 ml PTC (maximum 50 ml) in 250 mL D5W
  - Alternative: Use Plaquex protocol (Phlebitis)
  - Optional: Follow with glutathione push

PTC

- PTC is closest to Plaquex in composition
- PTC has been mixed with blood as with Lipostabil, maximum volume 10 mL
  - Sodium Deoxycholate is chemically a surfactant used to put the Phosphatidylcholine into solution, a rapid push may generate foam causing an accidental clot
  - It is recommended that PTC only be administered

Plaquex

- 50ml contain: 2500mg essential Phospholipids (70% Phosphatidylcholine), 1250mg Deoxycholic acid, 10mg Vitamin E, 450mg Benzyl alcohol, 120mg Ethanol, pH 8.2
- CI: Do not use in newborns, benzyl alcohol is toxic
- Side effects: Diarrhea in seriously ill pts.

Plaquex

- Basic protocol:
  - Mix Plaquex (at room temperature) with 250 ml of D5W
  - Treatment # 1 20ml Plaquex
  - Treatment # 2 30ml Plaquex
  - Treatment # 3 20ml to 50ml Plaquex
  - Treatment is infused over 90 minutes

Plaquex

  - BD catheters are recommended as the manufacturer has noted reactions with Terumo brand and with some butterfly sets
  - Causes phlebitis
- Severe cases may require 40-50 infusions to become asymptomatic without medications

Plaquex Quote

“Because of the ability of Plaquex to

cleanse 75 000 miles of blood vessels in the body, you as a physician will notice a dramatic improvement in cerebral

function, a return of sexual potency and of course a return to normal circulation to the coronary vessels with a disappearance of symptoms.”

Plaquex

- Source: http://www.anazaohealth.com/ U.S. source for compounded Plaquex
- From home page select Custom Pharmacy and click on Plaquex Formula

Lipostabil

- Contains 5% PC, 4.75% deoxycholate
- Approved in Germany for treatment of fat embolism, dyslipidemia, and liver cirrhosis
- Available in 5 mL Ampules
- Basic protocol:
  - Draw 5 to 10 ml Lipostabil into a syringe at least twice the volume, leave 5 ml air in syringe
    - Some add 0.5 mL heparin, 1000 IU/mL
  - Establish the IV using a 21 or 23 gauge butterfly set & draw an equal volume blood into syringe

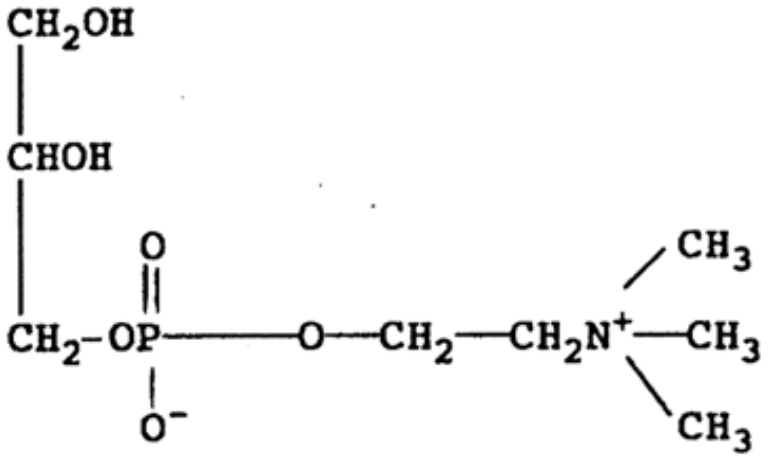
Lipostabil

- Mix the blood and Lipostabil during and after drawing sufficient blood into the syringe
- Immediately inject the mixture over 2-3 minutes, keeping the air bubble uppermost in syringe to avoid injecting air
- Remove empty syringe and attach syringe for glutathione push, 600-2500 mg
- Injections are given 3-5 times weekly until liver tests normalize
- It may be more prudent to add the Lipostbil to 250 mL D5W and infuse over 90 minutes
- Flush butterfly – administer glutathione IV push

Glycerophosphocholine

Indications for Parenteral GPC

- Stroke recovery
- Post-surgical encephalopathy
- Memory loss and other cognitive difficulties
- Personality deterioration, social withdrawal
- Growth hormone/anterior pituitary revitalization
- Craniocerebral injury (hematomas, contusions,



Glycerophosphocholine

How supplied: 20 mL multidose vial, 500 mg/mL

Dose: The typical dose is 1000 mg, 2 mL i.m. once daily, preferably in the morning for 30 days

- IV: 2 mL (1000 mg GPC) in 50-100 mL normal saline, lactated Ringers, D5W, infuse over 15-30 minutes.
- Injection phase is followed by p.o. dosing, 600 mg b.i.d. for 5 months
- Use caution if patient is taking cholinergic drugs.

Ref: Kidd, PM. Clinical Trial Summaries: GPC Injectable (Monograph). April 2005. http://dockidd.com/ Accessed 12.14.2010

Parenteral Product Source

Parenteral Product Sources

- Lipostabil: Need reliable wholesale source
- Glutathione:
  - 200 mg/mL, 30 mL vial PF

Case - PTC

- 52 YO Female
  - Multiple psychiatric diagnoses that were resistant to multiple psychiatric medications over a 1 year trial.
  - Psychiatrists were frustrated and began adding medications without D/C of prior medications.
  - Patient presented with components of Bipolar I, Anxiety, and multiple other complaints.

Case - PTC

- Patient agreed to getting a PICC line set, and an intensive course of IV treatment.
- IV included two to three times weekly administration (in succession below) of:
  1. IV – PTC (per protocol in this section)
  2. IV Nutrients (Vit-Min- Amino Acids formula)
  3. IV GSH Push at the end of Tx (1 – 4 grams)

Case PTC

- Patient responded well acutely to the protocol.
- She did better as we ramped the magnesium up in the Vit-Min AA protocol to a total of 4 grams magnesium sulfate per Tx.
- Patient was instituted on oral nutrients between IV Tx: (PTC, Mg, 5HTP, B-Complex, Multi-Vit).
  - After 3 weeks we began a **slow** medication taper.

Case - PTC

- We tapered the SSRI class of drugs first.
  - Patient responded well.
- Patient eventually completed 40 Tx
  - 2-3X a week for 30 Tx
  - Then weekly for 4 Tx
  - Then bi-monthly for the balance of Tx.
  - Patient continues to this day (> 1 year later) on only oral nutrients and one low dose medication.

Hydrochloric Acid

Hydrochloric Acid

- Dilute form used
  - 1:500 – 1:1000 concentration
  - In medical literature in the 1920's-1940's as an antibiotic

- IV of 10 cc SLOW push given
  - Stimulates WBC's
    - Used in Viral and some aggressive Bacterial conditions
      - Chemotherapy compromised
    - **<u>Contraindicated in any infection that cannot drain!</u>**
      - Skull, Jaw or Brain abscess…

Hydrochloric Acid

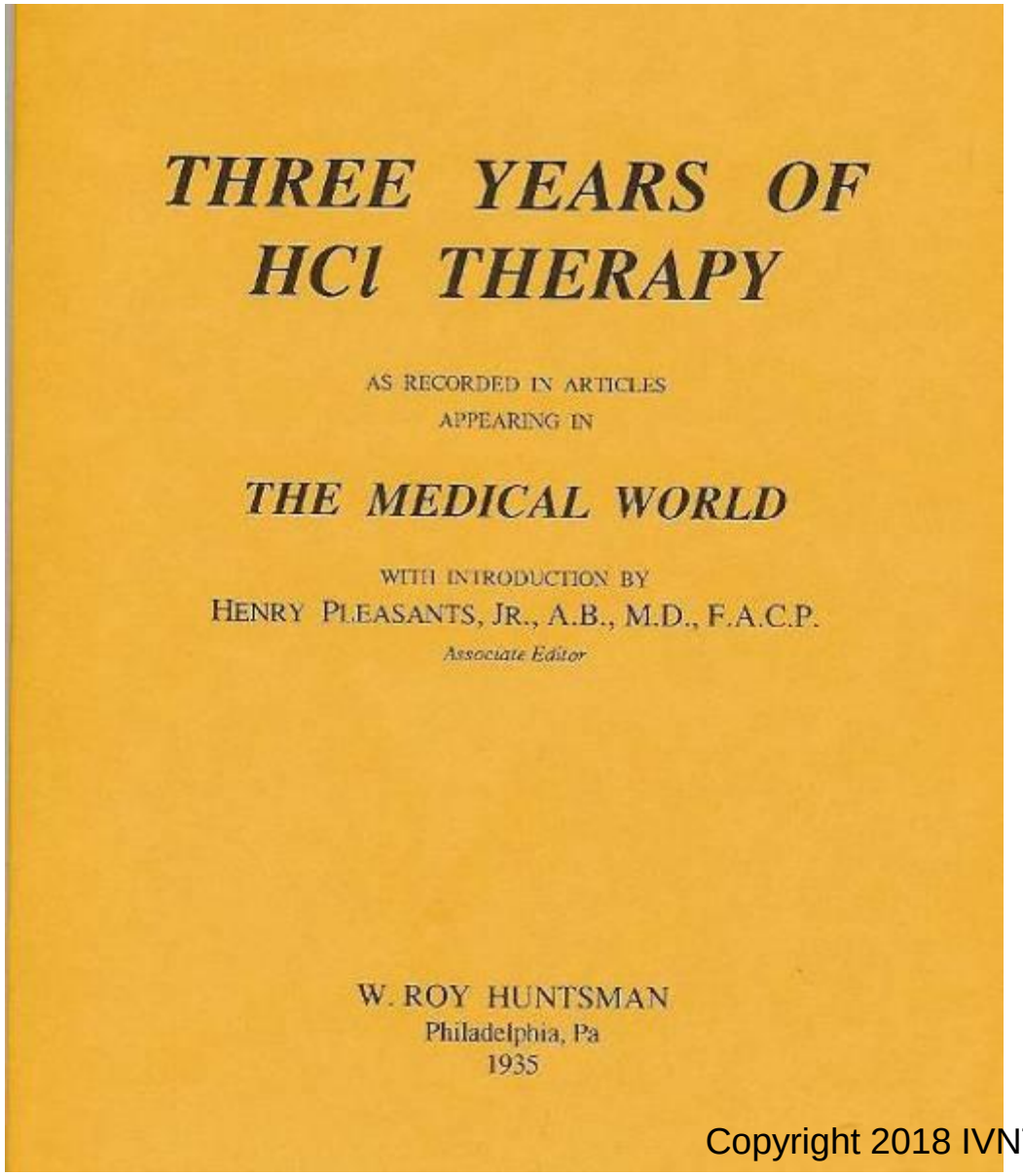
- Know your dilution form

- When to high:
- **IF PUSHED TOO QUICKLY WILL SCLEROSE THE VEIN!**

Hydrochloric Acid

- Dose and Administration:
  - Typical dose is 10 cc daily for 3 to 12 days for acute infection
    - Given as a slow push – or -
  - Used as an adjunct to Immune formulae **(given through side port of the IV line)**
  - **If diluted in a high volume IV it is only going to act as a pH adjuvant.**

The only source for the original HCl data. Very interesting and informative.



THREE YEARS OF HCl THERAPY

AS RECORDED IN ARTICLES
APPEARING IN

THE MEDICAL WORLD

WITH INTRODUCTION BY
HENRY PLEASANTS, JR., A.B., M.D., F.A.C.P.
Associate Editor

W. ROY HUNTSMAN
Philadelphia, Pa
1935

The enclosed information on HCL therapy is not intended as promotional material. It is only for use by the physician and is reprinted on request.

The Torrance Company

CO.
800 LENOX AVE
PORTAGE, MICHIGAN 49002

Claimed Success of Uses of IV HCL

- Iritis
- Sinusitis
- Wound infection
- Bronchial infection
- Staph & Strep
- Hepatitis with jaundice
- Tuberculosis
- Kidney infection
- Malaria
- Elephantiasis
- Leprosy
- Cerebrospinal meningitis
- Typhus
- Typhoid
- Smallpox
- Anthrax in animals
- Asthma
- Fungal Infections
- Given before elective surgery to reduce infection

Cancer support

- Prostate
- Breast
- Brain
- Gallbladder
- Hodgkins
- Sarcoma of mastoid
- Gastric and duodenal

Contraindications

- Tooth abscess
- Infected Appendix

Caution

- Sinus infection
- Middle ear infection
- Myelogenous leukemia (raises WBC)
- Can cause temporary fever

How does it work?

- Transitory extracellular acidosis.
  - Known to activate variety of immune cells

- Arch Surg.1986 Oct;121(10):1195---8
  PMID:3767651
- J Leukoc Biol. 2001 Apr;69(4):522---30.
  PMID:11310837 J Immunol 2006;176;1163---1171
  PMID:16394005 And many more citations

Clinical Research

Case 1:

<u>24 hours</u>

32% Increase Neutrophils

14% Increase Lymphocytes

12% Increase in B-cells

53% Increase in NK Cells

- Cells continued to remain elevated well into 72 hours after infusion.

Thanks to Dr. Davis Lamson, ND

Clinical Research

Case 2:

<u>24 hours</u>

14% Increase Neutrophils

68% Increase Lymphocytes

68% Increase in NK Cells

•Cells continued to remain elevated well into 72 hours after infusion.

Thanks to Dr. Davis Lamson, ND

Clinical Research

Case 3:

6 hours

Increase in all cell types 26-71% except NK Cells

24 hours: Cells returned to baseline

Thanks to Dr. Davis Lamson, ND