Comfrey

Symphytum Officinale –
The much debated healer
Introduction

- Symphytum Officinale
  - Greek
    - Symphytum – from Syumphuo = to grow together
    - Officinale = of the herbalist’s shop
- Comfrey
  - Corruption of Confirma = the uniting of bones
• “[Comfrey] is so powerful to consolidate and knit together, that if it be boiled together with dis-severed pieces of flesh in a pot, it will join them together.”
  – Nicholas Culpepper

• “The water of the Greater Comferie druncke helpeth such as are bursten, and that have broken the bone of the legge.”
  – Baker, Jewell of Health
• Dr. Charles MacAllister MD ran analysis on Comfrey in 1896 and found that it contained Allantoin.
• Allantoin is also found in
  – Mother’s Milk
  – Wheat Embryos
  – Beet Juice
  – French Beans
  – Green Peas
Uses of Comfrey

- Therapeutic Actions
  - Demulcent
  - Cell Proliferant
  - Astringent
  - Nutritive
  - Tonic
  - Expectorant
  - Hemostatic
  - Alterative
  - Vulnerary
  - Mucilage
  - Styptic
### Medicinal uses of Comfrey

- Anemia
- Arthritis
- Arthritic Fever
- Athlete’s Foot
- Bedsores
- Bee Stings
- Bits, Insect
- Blood Pressure
- Boils
- Bones (bruised, broken)
- Bowels (inflamed)
- Bronchitis
- Bruises
- Burns / Scalds
- Cancer
- Catarrah
- Chicken Pox
- Chilblains
- Colitis
- Conjunctivitis
- Corn
- Cough
- Cuts / Grazes
- Dermatitis
- Diabetes
- Diarrhea
- Digestion
- Duodenal Ulcers
- Cysentery
- Early Cellulitis
- Eczema
- Female debility
- Fractures
- Gangrene
- Gastrojejunal
- Ulcer
- Gout
- Gravel
- Gum Boils
- Hay Fever
- Heart Problems
- Hemorrhage
- Herpes
- Horse Fly Bites
- Ligaments (torn)
- Leukorrhea
- Mosquito Bites
- Infected Thumb
- Irritation
- Inflammation
- Joints (swelling)
- Kidney (ulcerated)
- Knee (swollen, sprained)
- Lichen-Planus
- Liver Trouble
- Lung (inflamed, ulcerated)
- Mole
- Nettles
- Pancreatitis
- Peripheral sores
- Piles
- Pinched Thigh
- Pleurisy
- Pneumonia
- Psoriasis
- Pulmonary T.B.
- Rash
- Rheumatism
- Rib (cracked)
- Ruptures
- Scrofula
- Shingles
- Sinusitis
- Skin Condition
- Sore finger
- Sprains
- Stomach
- (inflamed)
- Strains
- Sunburn
- Swellings
- Thyroid
- Tuberculosis
- Ulcers
- Urine (bloody)
- Verruca
- Wounds
Down on the Farm

- Allantoin
  - Takes care of health problems
    - Digestive issues
    - Urinary complaints
    - Scouring
- English gypsies feed a handful of comfrey in the spring
  - Takes care of winter torpor and other conditions
- Broken bones
  - Gypsies feed well bruised comfrey to assist healing
• Horses
  – English gypsies feed a handful of comfrey in the spring
    • Takes care of winter torpor and other conditions
  – Broken bones
    • Gypsies feed well bruised comfrey to assist healing
Nutritional Comfrey

• Amino Acids
  – Good source of Tryptophan
  – Source of Methionine
  – Mature leaves vs. young leaves
Nutritional Comfrey

- Vitamins contained
  - Vitamin A
  - Vitamin C
  - Vitamin B12
- High percentage of valuable minerals
Nutritional Comfrey

• Protein
  – Contains a large amount of protein
  – Content comparable to soy beans
  • Some say it contains 7 times as much as soy
Growing Comfrey

• Will grow from any sliver of root.
  – Best if a good portion of root is used to start a comfrey plot

• Comfrey will expand
  – Plan plenty of room for it

• Very resilient
  – Will withstand temperatures down to -40
  – Can be harvested every 10 - 30 days

• Compost from Comfrey
Comfrey Preparations

- Infusion
  - Standard Herbal Tea is the most Common Way to take comfrey
Comfrey Preparations

- Decoction
  - Root used
  - Should be used within 24 hours
Comfrey Preparations

- Mucilage
  - Taken from root of comfrey
  - Should be stored in a wide mouthed jar
    • In a cool place
Comfrey Preparations

- Lotion
  - Decoction mixed with equal part of glycerine
  - Soothing
    - anti-aging (?)
Comfrey Preparations

- Ointment
  - Base of beeswax
    - Creates a nice hardened finished product
  - Store in an unbreakable container
    - Old cosmetic containers work well
Comfrey Preparations

- Massage Oil
  - Soaks into skin better than ointment
  - Easier to use in a massage of the area
  - Can add other herbs for fragrance
Comfrey Preparations

- Poultice
  - Mortar and Pestal
  - Juicer
  - Slippery Elm Powder
    + Comfrey Leaf Powder
    (+ Lobelia or Calendula tincture)
Comfrey Preparations

- Salve
  - Cosmetic applications
  - Healing applications
Comfrey Preparations

- Burn Paste
  - Made in a blender
  - Best if used fresh (always mixed with olive oil)
• Dr. C, Nurses Son, Broken Arm, 5-days, x-ray, no sign of break (Coy)
• Cathy Gileadi infant son, slippery elm + comfrey + lobelia, thick paste, 1 week, new x-ray, no sign of break
• Broken collar bone, used BF&C ,7 days to heal
• Dr. C, experience/woman’s thumb wouldn’t bend, fomentation, next day – full mobility
• 3 missing fingers, cut off by asphalt in a rolled convertible accident, son of Dr. C's nephew, months later totally healed

• Crushed Kneecap, showed Dr. C in Christopher restaurant in Orem healed with BFC
• Studies pointing to harmful effects of Symphytum officinale were performed with the root which has a higher Pyrrolizidine alkaloid content and is not used internally in Dr. Christopher Formulas


• **Finding:** Determination of pyrrolizidine alkaloids in commercial comfrey products

• **Translation:** Demonstrates that products containing leaf in combination with other herbs contained the lowest alkaloid levels (0.1 ppm) of the products tested.
The Controversy

- Gastroenterology 1985 Apr;88(4)1050-4

- Finding: Hepatic venoocclusive disease with the consumption of pyrrolizidine-containing dietary supplements
- Rebuttal: In this case the woman ingested large portions of the root for an extended period of time
The Controversy

- Studies performed with the root (cont.)

  - Finding: Mutagenic effects of aqueous extracts of Symphytum officinale L. and of its alkaloidal factions
  - Rebuttal: This study was done on alkaloidal factions obtained from infusions of Symphytum officinale L. root and not the leaf. It shows that isolated constituents of the root may be toxic but fails to demonstrate the root is toxic in its whole form.
The Controversy

- Experientia 1982 Sep 15;38(9):1085-7

  • **Finding:** Pyrrolizidine alkaloids from Symphytum officinale L. and their percutaneous absorption in rats
  • **Translation:** This study demonstrates that pyrrolizidine alkaloids are not readily absorbed through the skin and therefore, are not of significant concern when applied in this manner.
Studies were performed with extremely concentrated extracts or single constituents of the herb containing higher Pyrrolizidine content than the whole plant.


**Findings:** Analysis, separation, and bioassay of pyrrolizidine alkaloids from comfrey.

**Interpretation:** Demonstrates that some parts of the plant contain higher pyrrolizidine content than others (the leaf containing the lowest). And that the effect of the alkaloids individually is different from that of the alkaloids in the whole plant extract.
The Controversy

• Int J Exp Pathol 1993 Apr;74(2):211-7
  • **Findings:** Hepatocyte membrane injury and bleb formation low dose comfrey toxicity in rats
  • **Rebuttal:** This study attempted to prove the toxicity of low level doses of comfrey by using isolated Pyrrolizidine alkaloids extracted from the plant.
The Controversy

- Studies with extremely concentrated extracts (cont.)
  - T. Furuya and K. Araki (1968)


  - Translation: Pharmacological tests with rats showing symphytine to have a LD50 of about 300 mg/kg; that in an intravenous injection of 300 mg of the purified alkaloid per Kg of rat tissue caused death in approximately 50% of the experimental animals. Thus in the case of comfrey tea, it is to be assumed that normal methods of infusion could extract just over half the alkaloid that was extracted by 8 hours in a Soxhlet apparatus in the laboratory, each cup of tea could contain 100 micrograms of alkaloid.
• **Rebuttal:** At this level the consumer could never attain the lethal dose of 300 mg/kg tissue found necessary to produce the acute reaction in rats. Even to consume this quantity it would take a 150 lb. man drinking 4 cups of tea per day a total of 140 years. This scenario is unrealistic. Comfrey leaf is not toxic unless copious quantities are consumed for long periods of time.
The Controversy

- Studies were performed by injecting plant constituents under the skin or in tissue cultures, exhibiting an unrealistic scenario of this plant’s use.
    - **Findings:** Studies on the effect of alkaloid extract of *Symphytum officinale* on human lymphocyte cultures.
      - This study used an isolated extract of comfrey on human lymphocyte cultures to show toxicity.
    - **Rebuttal:** This study fails to demonstrate the whole herb’s toxicity and was not administered as a decoction or infusion (the way comfrey is realistically consumed).
Findings: Injection of hepatic tumors in rats by senkirkine and symphytine

Rebuttal: This study was conducted on 3 groups of 20 rats. Group 1 injected with an extract of senkirkine, group 2 with symphytine (an alkaloid of comfrey), and group 3 with a NaCl solution. The rats were predisposed to liver problems (male inbred ACI rats). All group 1 rats survived for more than 290 days after the start of injections, and 9 of 20 rats developed liver cell adenoma. All group 2 animals survived for more than 330 days after the start of injections. Of 20 rats 4 had liver tumor, 3 had hemangioendothelial sarcomas, and 1 had liver cell adenoma. The control group 3, had no liver tumors.
The Controversy

– Once again this demonstrated that the isolated constituents can be harmful, but failed to test the plant as a whole in the correct method of administration.
Studies done by injecting plant constituents (cont.)

  - **Findings:** Carcinogenic activity of Symphytum officinale.
    - Rats were injected with isolated alkaloids from Symphytum o. resulting in mild liver damage compared to a control group.
  - **Rebuttal:** This study proved that in order to produce even a limited amount of liver damage in a rat it is necessary to administer the equivalent of serval times it’s own body weight of comfrey leaf (when the results are expressed as fresh material) or at least 1% of it’s diet as comfrey root.
The Controversy


  - Findings: Studies on constituents of crude drugs specifically alkaloids of Symphytum officinale
    - Pharmacological tests with rats showed Symphytine to have a LD 50 of about 300 mg/kg or rat tissue when given intravenously

  - Rebuttal: At this level the consumer could never attain the lethal dose of 300 mg/kg of tissue found necessary to produce the acute reaction in rats. Injecting plant constituents does not have the same physiological effect on the body's drinking an infusion (tea) of the plant.
The Controversy

- Many of the studies cited in literature related to harmful effects of Symphytum officinale were performed on related species with higher Pyrrolizidine alkaloids content than Symphytum officinale.

  - Pathology 1991 Jan;23(1):35-8
    - **Results:** The effects of comfrey derived pyrrolizidine alkaloids on rat liver
    - **Rebuttal:** Pyrrolizidine alkaloids extracted from Syphytum uplandicum were used to show the toxicity of comfrey. This Russian comfrey species is not sold or distributed in herbal formulas.
The Controversy

- Experientia 1980 Apr 15;36(4)377-9
  - **Results:** Structure and toxicity of the alkaloids of Russian comfrey (Symphytum uplandicum N.), a medicinal herb and item of human diet.
  - **Rebuttal:** Alkaloids extracted from this related species exhibited chronic hepatotoxicity in rats. This study was not performed with the whole herb of the correct species.
Symphytum officinale has been shown to act as a cell proliferant and have analgesic effects in clinical studies.

- Roum Arch Microbiol Immunol 1993
  - **Findings**: Action of some proteic and carbohydrate components of Symphytum officinale upon normal and neoplastic cells.
    - Crude water extracts of symphytum officinale stimulated in vivo proliferation of studied neoplastic cells. Therefore, Symphytum is an effective cell proliferant.
  - **Translation**: Traditional usage of comfrey as a cell proliferant is substantiated with this clinical trial
F.M. van den Dungen et al. Planta Med 57(2) 1991

- Findings: Inhibition of Complimet Activity by High Molecular Compounds of Symphytum officinale.

- Common comfrey, of Symphytum officinale L. is well known for its wound healing properties. At the site of a dermal wound, activation of complement is one of a complex series of processes. Since complement factors upon activation exert important immuno-regulatory effects, modulation of complement activity may promote the healing of wounds.

- Translation: Traditional usage of comfrey as a cell proliferant is substantiated with this clinical trial.
• Cell proliferant studies (cont.)
  – R.S. Goldman et al. Fitoterapia LVI(6) 323
  • Findings: Wound Healing and Analgesic Effects of Crude Extracts of Symphytum officinale in Rats
  • Findings: The crude extract of S. officinale (comfrey) afforded the cicatrization process by increasing at first the number of fibroblasts and in a later phase, the number of collagen fibers in experimental lesions produced in rats. The number of blood vessels was also increased on the seventh day of treatment. On experimental edema induced by crageenin in rat’s paw, the crude extract at doses of 150 and 300 mg/kg showed no effect. Analgesic effect was seen with doses of 300 mg/kg.
  • Translation: Comfrey’s use as a burn remedy is substantiate in this clinical trial.
Symphytum officinale contains hepatoprotective constituents that help protect the liver from damage, these substances are not included in tests of this plant and would affect the outcome of these tests.

– James Duke; United States Department of Agriculture Phytochemical and Ethnobotanical Database. (Search for all active constituents of S. officinale was conducted and included later in this report).

• Search for Hepatoprotective and Anti-tumor principles of Symphytum officinale.
This data base shows at least five substances in comfrey that have a protective effect on the liver; they are Caffeic acid, Chlorogenic acid, Glucuronic acid, Lasiocarpine and Rosmarinic acid. Caffeic acid has anti-hepatotoxic, anti-tumor, and hepatoprotective actions. Chlorogenic acid which has anti-cancer, anti-hepatotoxic, anti-mutagenic, anti-tumor, and hepatoprotective actions. Glucuronic acid is an anti-hepatotoxic, Lasiocarpine exhibits anti-tumor actions, and Rosmarinic acid is an anti-hepatotoxic.
Since Symphytum officinale has been used as animal feed and forage for centuries with safe results, it is likely that these hepatoprotective and anti-tumor qualities of the plant act to counter to plant’s Pyrrolizidine alkaloids content. This is why the most damaging studies done on comfrey were conducted using Pyrrolizidine alkaloids isolated from the plant while disregarding the plant’s significant liver protecting constituents that would have a profound effect on the results of the study.
• Sympytum officinale has been used as a feed and forage crop for centuries without incident
  • Evaluation of several crops as sources of leaf meal: Composition, effect of drying procedure and rat growth response
    – This study suggests benefits for consumption of S. officinale and does not implicate comfrey as a liver toxicant
  • Comfrey used in its whole form is safe
The Controversy

Lawrence D Hills Comfrey – Pat present and future 1976

- A test at the Fujisawa Farm of the Nihon Agricultural University in Japan showed that adult pigs do well on 8 to 9 kg of green comfrey leaf per day. This means replacing 30 percent of the meal with cut comfrey. The University report states a noticeable result was the improved health of the pigs fed on comfrey not only from the allantoin which banished scouring but better mineral balance. This was also observed at the Devon farm institute.

- Comfrey has been used as a feed crop for animals without incident, these were animals that consumed large amounts of comfrey for most of their lives.
Experience gained over many years with feeding cattle and horses on comfrey in different parts of the world has failed to produce any evidence of an acute reaction. Equally well there is an absence of any direct evidence of liver tumors of the chronic reaction in comfrey fed animals having been observed in slaughter houses.

No liver problems resulted in feeding farm animals comfrey in large amounts.
The Controversy

- Symphytum officinale has demonstrated it’s safety through thousands of years of documented traditional use.
  - Comfrey is referred to in Materia Medica written for thousands of years. Dioscorides (200 AD), Lobelius (1570), Sarracenius’s version of Dioscorides (1596), Gerald’s Herbal (1597) and the Pharmacopeia Londinensis Collegarum (1668) all point to the extensive use of Symphytum officinale as an herbal remedy. All also mention that Symphytum officinale was already established as an herbal remedy for some time. None of these early pharmacopeias and Materia Medicas give warnings of the herb’s use and generally regard comfrey as a safe plant with high value.
Symphytum officinale use has low incidence of hepatic problems

- Human Toxicology, PC Anderson and AEM McLean

- Hepatotoxic effects of Symphytum officinale questioned in clinical setting

- **Findings:** The Laboratory of Toxicology in London, sent volunteers a questionnaire regarding how long they had used comfrey and the amount and form in which the herb was taken. At the same time the participants underwent liver function tests at the local hospital. There was a considerable variation in how the herb was taken and in what form...
Nonetheless, results of the tests were found to be within the normal range with the exception of a slight elevation in bilirubin levels in two of the participants. There was no evidence of liver injury in this sample, even for those who had consumed the herb for twenty years.

Comfrey is safe when consumed in its whole state. The people in this study were repeat consumers of comfrey for long periods of time without ill effects.
The Controversy

- Case Studies that seem to show harmful effects from consuming Symphytum officinale reflect poor application of the scientific method.
  - Mee Ling Yeong et al J. Gastroenterology and Hepatology 5,211-214 1990
    - Hepatic veno occlusive disease associated with comfrey ingestion
    - **Story**: A 23 year old man was diagnosed with veno-occlusive disease after going to the hospital for a fever and malaise. Diuretics were administered and a shunt employed to relieve liver congestion. The died of liver failure seven days after installing the shunt....
...The liver was not biopsied to see if Pyrrolizidine alkaloids or their metabolites were present. His friends reported that he had consumed comfrey 1-2 weeks prior to his hospitalization. It was not determined what species or if indeed it was comfrey at al. It was also not determined if there were other Pyrrolizidine alkaloid sources present in his diet. Also, it was not determined if his habit of binge eating and consumption of marijuana caused deterioration of the hepatic cells leading to this problem.

**Rebuttal:** Nothing was done to determine if indeed he had ingested Symphytum officinale. The plant cannot be implicated on here say or on second hand accounts of it’s usage.
The Controversy

• Poor Scientific Method (cont.)
• Comfrey Herb Tea-Induced Hepatic Veno-Occlusive Disease
• Story: A 47 year old woman had consumed ten cups of comfrey tea a day along with handfuls of comfrey/pepsin tablets. This amount of consumption went on for more than one year. Four years later, she developed a liver problem diagnosed as veno-occlusive disease. Although the woman in the study consumed very large amounts of the plant...
... it was not determined exactly what species of Symphytum or indeed, if it was even a Symphytum species at all through current tests. She also had symptoms of abdominal pain and fatigue before using comfrey. These are both symptoms of veno-occlusive disease that she may have had before consuming the plant. This is not determined in this case. Therefore, the case study should not be used in reference to the hepotoxicity of S. officinale.

This woman had symptoms of veno-occlusive disease before consuming the plant. It cannot be determined if the plant worsened, caused, or had anything to do with her condition.
The Controversy

• Poor Scientific Method (cont.)
  – Ridker PM, et al Gastroenterology 88:1050-4 1985
    • Hepatic Vonocclusive disease associated with the consumption of pyrrolizidine containing dietary supplements
    • Story: A 49 year old woman consumed six capsules of comfrey-pepsin tablets daily for four months. For six months, she had taken Mu-16, which also contained Pyrrolizidine alkaloids. The researchers failed to investigate. The pyrrolizidine alkaloids in the Mu-16 tea could have been the toxic Macrocyclic diesters or another alkaloid. Yet, comfrey was implicated in this incident. There is also evidence that comfrey-pepsin tablets contain higher amounts of Pyrrolizidine alkaloids than other comfrey containing products.
    • Comfrey was not the only source of purrolizidine alkaloids in his diet. Comfrey cannot be implicated in this case study
The Controversy

• Poor Scientific Method (cont.)
  – Veno-occlusive decease of the liver secondary to ingestion of comfrey
  – Story: A 13 year old boy was treated for liver enlargement and abdominal swelling with Prednisolone and Sulfasalazine. This treatment seemed to help and the medication was discontinued. He was then treated with acupuncture and comfrey root tea. Exact strength and frequency are unknown but the course of treatment lasted more than two years. A flair up of Crhons’s disease led the doctor to prescribe more Prednisolone. After two years he was again hospitalized with fever, abdominal pain, and swelling. Liver biopsy showed veno-occlusive disease.
Rebuttal: Although at the time all other known factors were ruled out, further investigation shows that the medications he was taking could have been the major culprits in this case. Prednisolone can cause abdominal pain, gastrointestinal upset, and damage the liver. This liver damage (brought on through hypokalimic alkalosis) would have weakened his liver and made him more susceptible to liver toxicity. Sulfasalazine can cause headache, nausea, vomiting, gastric distress, and hepatitis. This indicates that people with a history of liver toxicity should not use Prednisolone and Sulfasalazine together.
• Symphytum officinale has demonstrated its safety through 36 years of use in Dr. Christopher’s formulas without incident.
  – There have been no reported incidents of serious side effects from people using Dr. Christopher’s formulas containing comfrey. We have found this herb to be safe and effective. Two incidence of slight skin irritation have occurred but these cleared up after discontinuing use of the product. Testimonials of the safety and effectiveness of Dr. Christopher products containing comfrey appear later in this report.
  – With thousands of people consuming Symphytum officinale everyday and with no incidence of the plant causing serious harm, it is obvious that it is safe for human consumption.

The Controversy