

ViralDefeat

SHL

SCIENCE REPORT

Clinically proven broad spectrum proprietary anti-viral



nuUMARA

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EXECUTIVE SUMMARY PREVAIL/SHL

The following report will provide evidence of safety and efficacy for the SHL formulation. It is for the prevention and treatment of respiratory infections and is a wide spectrum anti-viral formulation. The active ingredients of SHL are derived from a Traditional Chinese Medicine (TCM) formula called Shuang Huang Lian (SHL) consisting of three herbal ingredients: Flos Lonicerae, Radix Scutellariae and Fructus Forsythiae. Extensive scientific and clinical references will support all statements in this report. The report will conclude with an explanation of the proprietary and efficacious aspects of the formula.

As the concerns about flu pandemic grow globally, extensive efforts continue, including developing new vaccines. However, experts warned that the influenza virus is constantly mutating and the flu vaccine is considered to be effective only against the same strain of influenza virus used to develop the vaccine.

Unlike the vaccines, which are made in response to flu strains as they are recognized, as hot spots early in each flu season, Traditional Chinese herb therapies for influenza are not specific to the viral strain. Instead, they provide effects such as helping to boost the immune response so that it can eliminate the virus faster. Some also inhibit viral reproduction and relieve symptoms such as fever and coughing and therefore prevent the infection from developing into the full symptomatic disease. Others have a prophylactic effect and prevent viral replication.

Chinese herbs have proven to be effective in the recent pandemics. A recent WHO study on SARS treatment concluded that patients with normal SARS can be treated successfully by Traditional Chinese Medicine alone.¹ The same report also confirmed SHL as an effective remedy for flu.

SHL has been used by TCM doctors as the preferred agent for flu and viral respiratory infections and has been used on a routine basis for pneumonia since the 1960s. Since then, many clinical studies have proved SHL's efficacy on various influenza diseases. China's online scientific database www.wanfangdata.com alone has more than 2,000 SHL clinical papers. Some of those studies can be found in the appendix. Of great significance is that SHL was also recommended by China's Ministry of Health in a newly released guideline for the diagnosis and treatment of influenza type H1N1². (Oct. 2009)

On a recent CBC radio interview, Dr David Butler Jones, Canada's Chief Medical Officer, revealed that 33% of those contracting H1N1 also have bacterial complications. These complications can often cause fatal consequences. SHL has been shown to have a significant impact on ameliorating these complications.

¹ WHO: <http://apps.who.int/medicinedocs/en/d/Js6170e/8.html>

² Ministry of Health, China: <http://61.49.18.65/publicfiles/business/htmlfiles/mohyzs/s3586/200907/41719.htm>

Administration to infants and children can be a treatment challenge for many of the mainstream pharmaceuticals and even natural health products. SHL has significant proof that it has efficacy on infants as young as six months.

Summary of Major Advantages of ViralDefeat include:

- ✓ All natural ingredients.
- ✓ Proprietary.
- ✓ Concentrated.
- ✓ Efficacious.
- ✓ Prevention of virus reproduction
- ✓ Enhance immune system
- ✓ Long successful history for treatment for respiratory infections including influenza, regardless of virus strains.
- ✓ Proven remedy backed up by clinical studies worldwide.
- ✓ Formula is listed in the Pharmacopoeia of China (2000)
- ✓ Highly cost effective compared to antiviral drugs such as Tamiflu
- ✓ Sound methodological quality
- ✓ Used for children as young as 6 months
- ✓ Used in hospitals
- ✓ Non-toxic.
- ✓ No side effects

The ViralDefeat/SHL FORMULA

The SHL formula has been used since the 1960s and is commonly used to treat respiratory tract infections and considered to be a wide spectrum anti-viral. The formula is an herbal combination product containing extracts of the flower of *Lonicerae japonicae*, the root of *Scutellariae baicalensis* and the fruit of *Forsythia suspense*. All three ingredients have a long history of safe use in TCM. In TCM, Fructus Forsythia (*Forsythia suspense* (botanical name)) is often used in combination with Flos Lonicerae to clear infections and inflammations associated with External Wind Heat such as sore throat and fever. Many TCM formulations that are indicated for severe fever would also have Radix Scutellaria (dried root of *Scutellariae baicalensis*) included. The formula is usually prescribed in the form of an oral tincture and can also be administered intravenously or as an oral spray.

The SHL formula is well-established and is listed in the Pharmacopoeia of China (2000). It is indicated for the removal of toxic heat and inducing diaphoresis (perspiration) and is commonly used to treat upper respiratory tract infection, acute bronchitis and light pneumonia. The formula has been available as a treatment for acute lower respiratory infections in hospital settings in China since 1973 and is effective and free of toxic effects (Kong, 1993).

EFFICACY OF THE FORMULA

The SHL formulation has a long history of use in the treatment of respiratory ailments. There are a significant number of peer-reviewed clinically valid trials demonstrating the efficacy of SHL. It is commonly prescribed in China for this purpose and is clinically effective in the treatment of respiratory disorders (Kong, 1993; Liu and Douglas, 1998).

A review of clinical trials using traditional Chinese formulations in the treatment of respiratory tract infections was performed by Liu and Douglas (1998). In their review they considered two trials performed using SHL as being of high methodological quality. The quality of and the results from the two trials led to the review author's conclusion that, "the SHL is a promising remedy for the treatment of bronchitis and pneumonia."

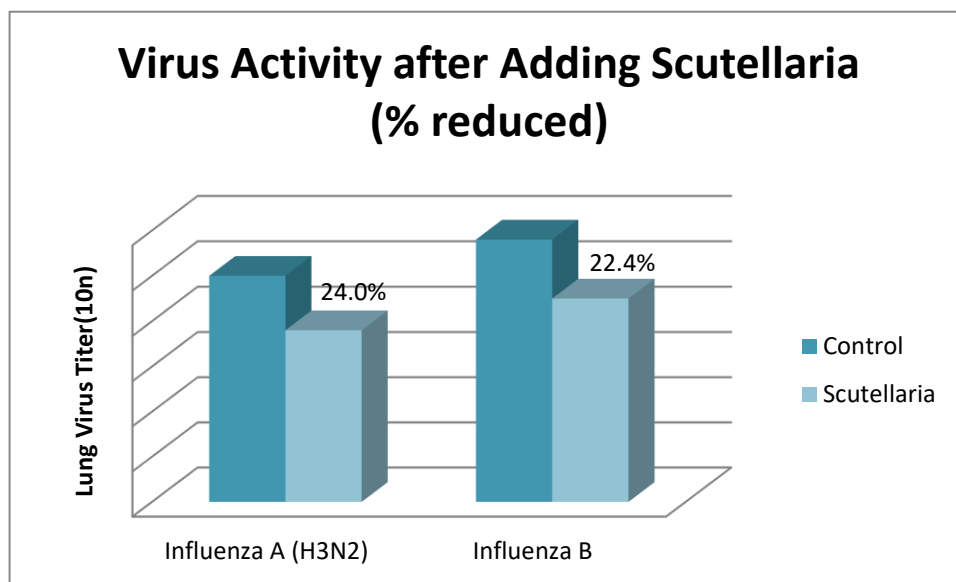
SHL has been shown to have tremendous properties for the prevention and treatment of influenza A & B as well as Rhinovirus. Furthermore, it is important to note that SHL is effective for a host of post influenza complications including Viral Myocarditis, Pneumonia, Upper Respiratory Tract Infections, etc.

ANTI-VIRAL EFFECTIVENESS

Various studies have demonstrated that the SHL formula exhibits antiviral properties on several viral pathogens including RSV virus (Respiratory Syncytial Virus) (Wu et al, 2005; Yang and Liu, 2007, Myocarditis virus (Lin et al 2000), Hepatitis virus (MHV-3) (Yi et al 2006) and HIV virus (Zhang et al 1999).

Influenza A & B Virus

In 1995, Nagai, Suzuki et al reported in Biological Pharmaceutical. Bulletin that they had found antiviral activity in a plant flavonoid derived from *Scutellaria baicalensis* against Influenza A (H3N2) and B viruses. The agent suppressed replication of these mouse-adapted viruses and in canine kidney cells. The agent suppressed replication of these viruses from 6 to 12 hours after incubation.



H1N1 Virus

An animal study (Wu et al, 2009) demonstrated the effective antiviral properties of baicalein, the main active compound of *Radix Scutellariae*, in treating rats infected with the H1N1 virus.

H1N1 – Ministry of Health – Central Chinese Government

The most significant message as to SHL effectiveness has come from the Ministry of Health-China (MOHC). In response to the H1N1 pandemic, the MOHC promptly issued its first treatment recommendations to the public in May 2009. This SHL formula was among the five TCM formulas recommended to treat infections including those of the respiratory tract and pneumonia. With increased scientific information and evidence

becoming available, the MOHC then issued a second report and then a third report of the recommended treatment schemes in July and October 2009 respectively. The SHL formula has remained as one of the primary choices of TCM treatment in fighting H1N1 flu virus infection.

MOHC Guideline

<http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohyzs/s3585/200905/40478.htm>

Viral Propagation Prevention (Prophylactic Effect)

Many researchers have tested SHL's effectiveness in inhibiting different viruses. For example, a study led by Yi Shihong in 2001 has shown that SHL has a significant effect on protecting cell tissue from influenza, respiratory syncytical virus, Adenovirus, Herpes simplex virus I, II, Coxsackie virus B3, B4, A16 and some effect on poliovirus III, ECHO virus 6, measles virus. (*Curative effect of Shuanghuanglian injection on anti-virus in vitro*)

Comparison of protection rate of SHL against viral infection from tissue culture cells (%)

Group	CVB ₃	CVB ₄	CVA ₁₆	PV III	ECHO ₆ V	RSV	MV	HSV-1	AdV III	A ₃ V	EV ₇₁	HSV-2	VSV
I	90.8	92.3	82.3	44.3	50.0	90.0	70.1	88.0	94.5	80.4	95.0	93.0	76.9
II	92.1	93.4	83.4	50.1	52.1	80.5	82.3	85.2	93.0	86.0	90.0	89.0	65.7
III	70.1	80.0	70.5	54.5	60.3	69.0	68.5	93.0	70.1	96.5	75.0	75.8	57.2
IV	69.0	81.2	70.0	60.5	75.3	70.2	70.0	79.4	68.9	80.1	70.0	70.0	50.4

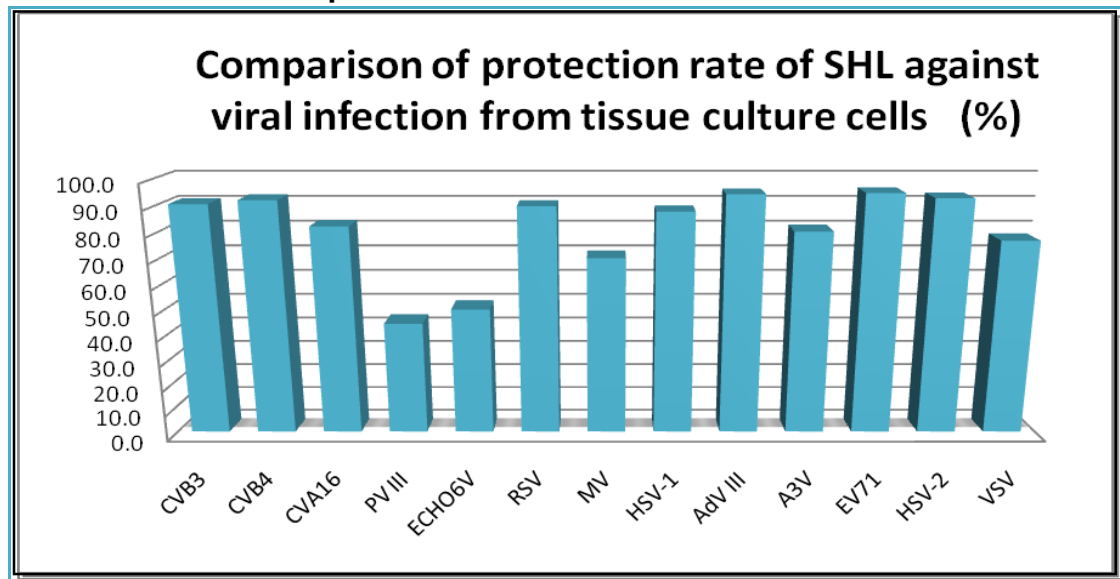
Notes: Group 1: add SHL 24 hrs before adding virus

Group 2: add SHL 1 hr after adding virus

Group 3: add SHL and viruwork together to the tissue culture cells at the same time

Group 4: Mix SHL and virus, wait 2hrs, and then add to the tissue cells

Chart Based on Group 1 Data



CVB₃, CVB₄: Coxsackie virus type B3 and B4

CVA₁₆: Coxsackie virus type A16

PV III: Poliovirus type III

ECHO₆V: ECHO virus type 6

RSV: Respiratory Syncytial Virus

MV: Measles virus

HSV-1: Herpes Simplex Virus type 1

AdV III: Adenovirus III

A₃V: Influenza virus

EV₇₁: Enterovirus type 71

HSV-2: Herpes Simplex Virus type 2

VSV: Vesicular stomatitis virus

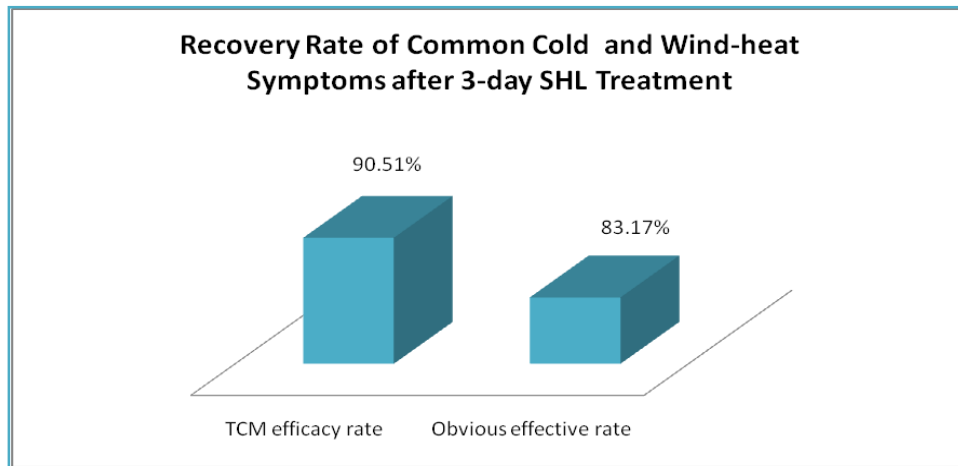
SARS

During the SARS pandemic a few years ago, either individual ingredients of the SHL formulation or the formulation itself were among the few protocols that were effectively used either to relieve SARS symptoms or to inhibit or reduce viral or inflammatory reactions (Lin, 2003; Tong et al. WHO Report 5). The antiviral mechanisms of SHL formula in fighting SARS were further demonstrated in an in vitro study. Chen et al. (2004) found that Baicalin (active compound of Radix Scutellariae) and chlorogenic acid (active compound of Flos Lonicerae) exhibited antiviral activities on the 10 strains of SARS coronavirus isolated from different SARS patients.

Common Cold

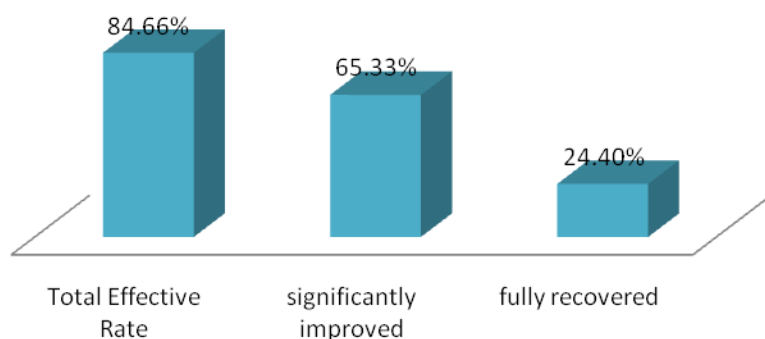
Using SHL to treat the common cold has been the subject of many clinical studies.

Hu et al. (2008) studied the effectiveness of an SHL tablet in treating the common cold. The study was a randomized controlled clinical trial which involved 160 subjects. The study found that an 83% effective rate within three days of treatment with SHL, as compared to 80% for the treatment with Lian Qiao Jie Du Wan, another well-known TCM formulation.



In another study, by Jiang et al, 2008, titled Clinical observations of 422 cases of common cold and flu treated with Shuanghuanglian Koufeye (oral), the results were significant. The multicenter randomized clinical study was conducted to evaluate the efficacy of Shuanghuanglian (SHL) Koufeye in treating common cold and wind-heat symptoms and showed that 24.4% of patients were fully recovered in three days, 65.33% were significantly improved in 3 days and the total effective rate was 84.66%.

Recovery Rate of Common Cold after 3-day SHL Treatment



Anti-Oxidant

SHL has also been shown to have an anti-oxidant effect. In a study titled, *Characterization of Antioxidant Activity of Extracts from Flos Lonicerae*, Wu Lan et al, it was said:

The present results demonstrate that all Flos Lonicerae extracts examined here exhibit antioxidant activity and chlorogenic acid is a major contributor to this activity, which implicates that the Flos Lonicerae extract may serve as a potential source of natural antioxidants for treatment of some diseases.

POST-INFLUENZA & COMMON COLD COMPLICATIONS

Bronchitis & Pneumonia

SHL formulation has been used to the assisted-treatment of infantile pneumonia. Ribarivin is commonly used to treat infections in the upper respiratory tract. When Ribarivin was administrated in combination with SHL, Sun & Ling (2007) found that this combination is significantly more effective in relieving pneumonia symptoms in infantile patients. In another animal study, Song et al. (2000) concluded that SHL and Angelica – a widely used TCM herb – were both individually effective in increasing the resistance of rats to the lung infection of *Pseudomonas aeruginosa*.

Kong et al. (1993) performed a single-blind randomized three arm study examining the use of SHL in the treatment of respiratory syncytial virus infection. The SHL formulation was evaluated for efficacy in the treatment of acute bronchitis on children by the Harbin Medical School in China (Kong et al. 1993). This study was collaboratively carried out between The University of Newcastle in Australia and Harbin Medical University, China using rigorous procedures.

Results from the study showed that treatment groups receiving the herbal formulation had significantly lower mean duration of symptoms, including cough, wheeze, chest crackles, chest wheezes and fever. Additionally a significantly higher number of children demonstrated improvement of symptoms within two days of herbal treatment compared with those who were treated with antibiotics only. The authors also stated that the formulation could be of benefit to a wider spectrum of respiratory diseases (Kong et al 1993).

The mean reduction of the course of the illness was significantly shorter in groups treated with SHL herbs than with antibiotics alone as shown in the following table:

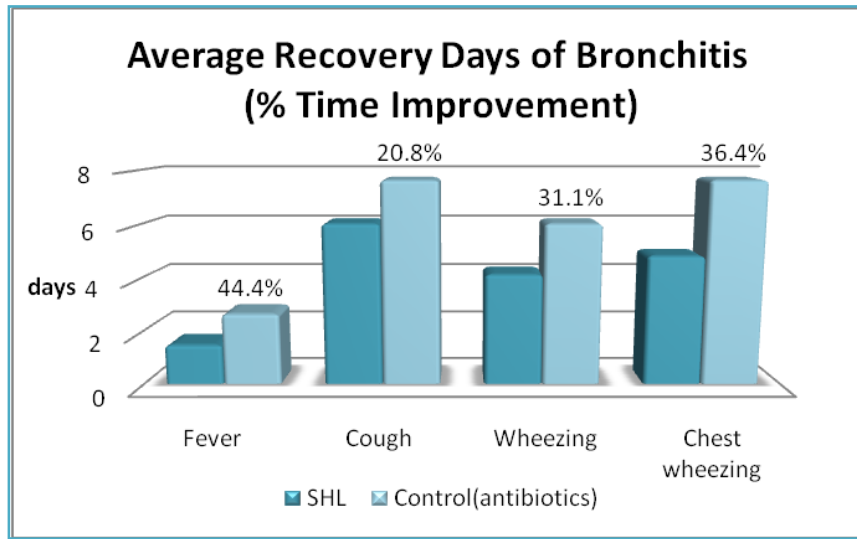
Table 1: Mean duration (days) of signs and symptoms after treatment. Results given as geometric mean days (95% confidence)*

Symptoms	Group A (SHL)	Group B (SHL + Antibiotics)	Group C (Antibiotics)
Fever (n=51)	1.5	1.9	2.7
Cough (n=96)	6.1	5.5	7.7
Wheezing (n=87)	4.2	4.0	6.1
Chest wheezing (n=77)	4.9	4.6	7.7
Chest crackles (n=83)	4.2	4.3	6.6
Any sign or symptom (n=96)	6.4	6.0	8.6
Hospital stay (n=96)	7.8	7.0	9.8

Reproduced from Kong et al., 1993.

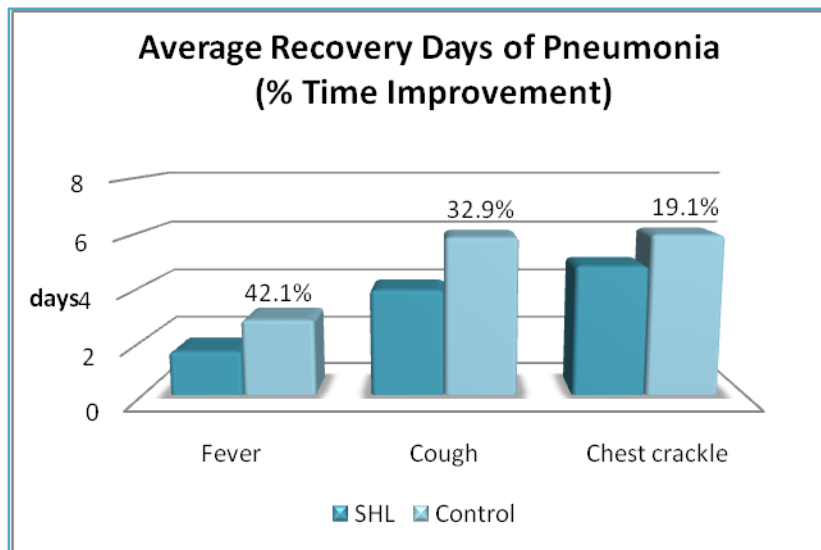
In addition, there were more children with an improvement of symptoms within two days of starting SHL treatments, and fewer with symptoms persisting for one week, than with the non-SHL treatment.

The following two charts demonstrate the time advantage in symptom relief when SHL is compared to antibiotics. (see Table 1 above)



* Based on a clinical study of 215 patients by Kong et al *Treatment of Acute Bronchiolitis with Chinese Herbs*

The other trial reported in the review was a randomized clinical trial performed by Yu et al. comparing treatment of pneumonia with SHL and antibiotics (Liu and Douglas, 1998). Results showed the group receiving this herbal formula showed significantly better relief of fever, coughing/wheezing and chest cackles compared with antibiotic treatment (Liu and Douglas, 1998).



* Based on a clinical study of 203 patients by Liu YD et al *Observation of curative effect of shuanghuanglian agent in clinical treatment of 203 cases with respiratory diseases*

Both the trials examined the use of an intravenous preparation for the treatment of their respective study indications. This particular type of treatment has been available as a treatment for acute lower respiratory infections in a hospital setting in China since 1973 and has been shown to be effective and free of toxic effects (Kong, 1993). It has been reported that results from preliminary studies administering a nebulized (spray) solution of SHL is equally effective (Kong, 1993)

Upper Respiratory Tract Infections

Respiratory tract infections affect the nose, throat, and airways and may be caused by any of several different viruses. The SHL formulation has been used to treat respiratory tract infections in a hospital setting since 1973 (Kong, 1993) and continues to be the primary TCM treatment of choice for such an ailment. Various studies have shown that SHL is effective treating acute upper respiratory tract infections, bronchitis, pneumonia as well as common cold.

In treating acute upper respiratory infection, Chi & Qian (2007) compared the effectiveness of SHL injection with ribavirin, a commonly used antiviral drug treatment. The study was randomized and involved 110 clinical subjects. The study revealed a 95% effective rate in SHL treatment as compared to 86% for ribavirin. In a similar study, Zhang & Xi (2009) found SHL was more effective in treating acute URTI patients than Qingkailing, another commonly used antiviral TCM formulation. They observed that SHL was 91% effective as compared to about 81% for Qingkailing.

Viral Myocarditis

Viral myocarditis is severe disease developed from flu and commonly happens to children. A study by Lin Guozhen et al in 2000 used SHL to treat viral myocarditis among 62 children. It showed that 81.2% were cured and 15.6% were improved in SHL group. (*Clinical observation on shuanghuanglian (shuang huang lian) in treating viral myocarditis of children*).

SAFETY OF THE FORMULA:

As stated above the formulation has a well-established history of use in TCM. The formula is described in the Chinese Pharmacopeia (2000) and is considered safe for its intended use. A history of safe use is associated with both the intravenous and the oral administrations. No serious adverse events or toxic reactions were observed in association with either of the clinical trials described above. Additionally, each of the medicinal ingredients in the formula is considered safe and has documented histories of safe use. (see references in next section)

In the Kong et al. (1993) single-blind randomized three arm study examining the use of SHL in the treatment of respiratory syncytial virus infection, animal studies reported that the lethal dose (LD50) of SHL injection from animal studies is 56.1 or 7.1 ml/kg. This is an excellent result demonstrating that toxicity dangers are of no concern. The authors concluded that SHL was “safe and effective”.

BOTANICAL INGREDIENTS

The formula consists of extracts of three herbal ingredients: Flos Lonicerae, Fructus Forsythiae and Radix Scutellariae. Each of the three ingredients have a long term well documented use in TCM and are all indicated in TCM for treatment of respiratory ailments (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003; The State Pharmacopoeia Commission of China, 2000). Each of the ingredients has unique properties and is thought to work in synergy with each other to effectively treat respiratory disorders (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003).

Recent scientific studies have shown that the ingredients have anti-bacterial and anti-viral properties. Additionally the ingredients have been shown to have effects on the pathways that regulate the immune system and the inflammatory response. Furthermore, viral replication is inhibited. The ingredients also demonstrate potent anti-oxidant activity and effective free radical scavenging activity. It is through these direct and indirect actions that the ingredients are thought to elicit their therapeutic effects.

Flos Lonicerae

Flos Lonicerae is the flower of the honeysuckle (*Lonicerae japonicae*). The flowers are commonly brewed for tea in China (Hu, 2005). The flower also has a well recorded history of use as a popular ingredient in Traditional Chinese Medicine (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). It is used to clear heat, relieve toxicity, dissipate wind-heat, cool the blood, regulate qi and to treat dysentery due to heat toxins (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). The ingredient is indicated for sores occurring in the initial stage of warm diseases or resulting from infections caused by externally-contracted wind-heat and for dysentery due to heat toxins (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). The ingredient is reported to be a broad spectrum antimicrobial herb used to clear infections and inflammations associated with External Wind Heat (Tierra and Tierra, 2003).

Extracts of the ingredient have been shown to inhibit bacteria, influenza viruses (Zhu, 1998) and respiratory syncytial virus (Ma et al. 2002). The ingredient also has anti-inflammatory effects (Zhu, 1998). Yoo et al. (2008) investigated the anti-inflammatory, anti-angiogenic and antinociceptive activities of a *Lonicera japonica* extract. Through a variety of in-vivo and in-vitro assays the authors demonstrated the extracts acute anti-inflammatory action through various pathways. Yoo et al. (2008) also demonstrated the extract's ability to inhibit angiogenesis, a contributor to various pathological conditions including inflammatory disease. Yoo et al. (2008) also found that the extract appeared to prevent the release of inflammatory mediators, suppress Nitric Oxide production through inhibition of Inducible Nitric Oxide Synthase (iNOS), and suppress Reactive Oxygen Species (ROS) generation due to lipopolysaccharide (LPS) treatment in macrophages. Xu et al. (2007) also reported extracts of the flower also demonstrated inhibition of other key inflammatory reaction inducers cyclooxygenase-1 (COX-1) and cyclooxygenase-2 (COX-2).

The finding of inhibition of ROS generation by Yoo et al. (2008) also demonstrated the anti-oxidant activity of the ingredient. Lan et al. (2007) and Choi et al. (2007) also reported the antioxidant activity of Flos Lonicerae extracts. Lan et al. (2007) reported extracts of *Flos Lonicerae* scavenged free radicals and acted as a metal chelator. Flower extracts have also been shown to have anti-bacteria, anti-viral and anti-fungal actions in in-vitro studies (Zhu, 1998).

The ingredient has a long history of safe use in TCM (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). No precautions for its traditional use are noted ((Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). Animal studies have produced no significant toxic reactions or any changes in respiration, blood picture and urine output (Zhu, 1998).

Fructus Forsythiae

Fructus Forsythiae is the fruit of forsythia (*Forsythiae suspensa*). The fruit is used in traditional Chinese Medicine to clear heart-fire, relive toxicity of sores, regulate qi and dissipate externally-contracted wind-heat. It is often prescribed for use for symptoms of fever, headache and thirst ((Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003).

The ingredient has been shown to have anti-bacterial anti-pyretic and anti-inflammatory activity. It has also been demonstrated to have potent anti-viral activity (Ma et al. 2002). Piao et al. (2009) demonstrated lignin from the plant had potent anti-oxidant activity, inhibiting ONOO-induced cell death in-vitro. Dai et al. (2009) isolated alkaloids from the plant with significant anti-inflammatory activities. Qu et al. (2008) reported the isolation of compounds in the ingredient that had antioxidant and antibacterial activities. Ko et al. (2006) demonstrated that *Forsythia suspensa* had a significant inhibitory effect on RANTES, a potent chemoattractant, released by influenza A virus (H1N1)-infected human bronchial epithelial cells in-vitro. In another study, Ko et al. (2005) also demonstrated the potent inhibition of RANTES in influenza A virus (H1N1)-infected human bronchial epithelial cell lines. The study also demonstrated the inhibition of another chemotatic protein-1 (MCP-1) (Ko et al. 2005).

Ozaki et al. (2000) isolated a compound from the fruit that showed anti-inflammatory effect in rats. Park et al. (2005) reported *Lonicera japonica* extract had significant inhibition of NO production and TNF-alpha secretion. Zhang et al. (2002) reported the isolation of a compound in *Forsythia suspense* that had potent anti-viral activity against Respiratory Syncytial Virus (RSV).

The fruit has a history of safe use in TCM (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003).

Radix Scutellariae

Radix Scutellariae is the root of the Baikal skullcap (*Scutellariae baicalensis*) and is used in traditional Chinese Medicine to clear heat, dry dampness, drain fire, relieve toxicity, cool the blood, and quiet the foetus (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). It is indicated for all diseases caused by damp-heat, such as damp-warm diseases, summer heat-warm diseases and fullness in the chest and abdomen due to damp-heat as well as for dysentery, diarrhea, jaundice and heat Lin syndrome (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). It is also used to treat sore and swollen throat, toothache, dry stool due to stomach-fire, cough due to Lung-heat. (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003).

The root has been shown to have anti-inflammatory and anti-pyretic effects. The root is reported to have a wide anti-bacterial spectrum, with decoctions showing activity in-vitro

against hemolytic streptococcus, pneumococcus, meningococcus, *Staphylococcus aureus*, *Bacillus diphtheria*, *B. dysenteriae*, *B. anthracis*, *B. typhosus*, *B. paratyphosus*, *B. proteus*, *E. coli*, *P. aeruginosa*, *Bordetella pertussis* and *Vibrio comma* (Zhu, 1998). Decoctions of the ingredient have also demonstrated in-vitro anti-viral activity (Zhu, 1998). Zhu (1998) also describes studies demonstrating the ingredient's anti-inflammatory and antipyretic effects.

Isolates from the root have demonstrated potent anti-viral effects (Blach-Olszewska et al. 2008; Ma et al. 2002; Nagai et al. 1995; Zhu, 1998). Blach-Olszewska et al. (2008) suggested that the anti-viral activity of the ingredient was due to flavonoids in the root regulating the innate antiviral immunity of the immune system through modulation of cytokine production and stimulation of human leukocyte resistance. Their study (Blach-Olszewska et al. 2008) demonstrated that a water extract of the root selectively inhibited IFN-alpha and IFN-gamma and stimulated TNF-alpha and IL-12 and IL-10 production in peripheral blood leukocytes. They also reported the augmentation of the resistance of the leukocytes to vesicular stomatitis virus infection. Nagai et al. demonstrated that flavones isolated from the plant inhibited influenza A and B virus's proliferation through inhibition of the fusion of the viral envelopes. Ma et al. (2002) determined that the compounds wogonin and oroxylin A were the flavonoids with the greatest activity against reparatory syncytial virus in the plant extract. Their study also showed that Baicalein and Baicalin also demonstrated antiviral activity (Ma et al. 2002). Huang et al. also (2000) reported the compound wogonin to be demonstrating activity against Hepatitis B virus.

Yoon et al. (2009) demonstrated the anti-inflammatory activity of a water extract of the root. In their study, Yoon et al. (2009) showed that the extract was capable of significantly inhibiting the production of NO, a number of inflammatory cytokines and vascular endothelial growth in cells exposed to LPS. Liang et al. (2009) reported that baicalin, a major constituent of the ingredient, was able to regenerate beta-carotene and exhibited a strong synergistic effect with beta-carotene to significantly enhance the free radical scavenging and antioxidant activity of the molecule. Other flavonoid compounds isolated from the plant have also been shown to have anti-inflammatory activity (Chen et al. 2008; Hsieh et al. 2008; Burnett et al. 2007; Huang, 2007).

The root is a commonly prescribed ingredient in TCM and has a long history of safe use (Zhu, 1998; Xu and Wang, 2002; Hempen and Fisher, 2001; Wu, 2005; Tierra and Tierra, 2003). Side effects of the herb are mild and mainly mild gastro-intestinal irritation and diarrhea (Zhu, 1998).

BOTANICAL INGREDIENTS BENEFIT SUMMARY

Flos Lonicerae

Core Feature

1. Anti-viral
2. Acute anti-inflammatory
3. Inhibits bacteria
4. Anti-oxidant
5. Inhibits *respiratory syncytial virus* (RSV)*

Bonus Features

6. Antinociceptive (reduces sensitivity to pain)
7. Anti-fungal

*Major cause of lower respiratory tract infection and hospital visits during infancy and childhood.

Safety

No known contraindications
No precautions needed

Fructus Forsythiae

Core Features

1. Potent anti-viral (H1N1 implications)*
2. Potent anti-oxidant
3. Anti-bacterial
4. Anti-inflammatory

Bonus Features

5. Used for symptoms of fever and headache
6. Potent anti-viral activity against Respiratory Syncytial Virus (RSV).

Safety

7. History of safe use in TCM

* Potent inhibition of RANTES in influenza A virus (H1N1)- (Ko et al. 2005).

Radix Scutellariae

Core Features

1. Potent anti-viral (influenza A & B)*
2. Anti-inflammatory
3. Wide anti-bacterial spectrum **

** Activity in-vitro against

Hemolytic streptococcus	B. typhosus
Pneumococcus	B paratyphosus
Meningococcus ¹	B. proteus
Staphylococcus aureus	E. coli
Bacillus diphtheria	P. aeruginosa
B. dysenteriae	Bordetella pertussis
B. anthracis	Vibrio comma

Pneumococcal disease is a **leading cause of serious illness in children** and adults throughout the world. The disease is caused by a common bacterium, the pneumococcus, which can attack different parts of the body. When bacteria invade the lungs, they cause the most common form of community-acquired bacterial pneumonia; when bacteria invade the bloodstream, they cause bacteremia; and when they invade the covering of the brain, they cause meningitis. Pneumococci may also cause otitis media (middle ear infection) and sinusitis. Currently there are more than 90 known pneumococcal types; the ten most common types account for approximately 62 percent of invasive disease worldwide.

Bonus Features

4. used to treat sore and swollen throat and cough
5. demonstrated activity against Hepatitis B virus.

Safety

Commonly prescribed ingredient in TCM and has a long history of safe use.

*Inhibited influenza A and B virus's proliferation through inhibition of the fusion of the viral envelopes.

BOTANICAL INGREDIENTS BENEFIT SUMMARY CHART

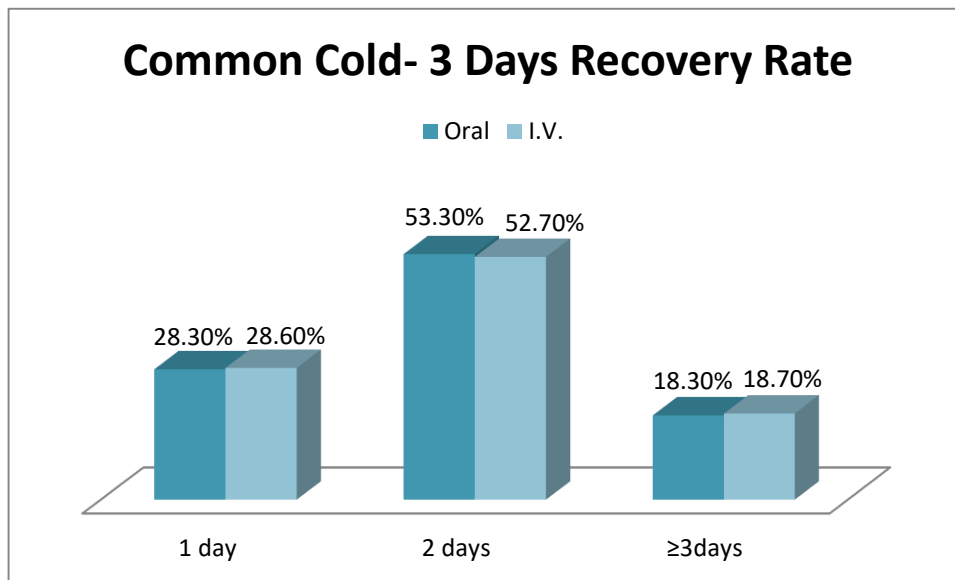
	Flos Lonicerae	Fructus Forsythiae	Radix Scutellariae	COMBINED VALUE
Anti-viral	✓	✓	✓	✓
Anti-bacterial	✓	✓	✓	✓
Anti-inflammatory	✓	✓	✓	✓
Anti-oxidant	✓	✓		✓
Anti-fungal	✓	✓		✓
Anti-biotic	✓			✓
Immune Booster			✓	✓
Anti-asthmatic	✓			✓
Common Cold	✓			✓
Respiratory Syncytal Virus	✓	✓		✓

Other Relevant Studies

Intravenous Versus Oral

Some of the enclosed studies were completed via an intravenous method, and the question arises as to the efficacy comparison with oral. In the study titled, "Clinical observations of common cold treated with Shuanghuanglian oral suspension or intravenous injection," by Rong JR et al, the result was stated as follows:

As the recovery rate as shown in the table, there was no significant difference in the efficacy of the two forms of SHL. ($P>0.05$). Oral suspension, however, provides a safer and more convenient and cost-effective option for the majority of common cold patients.

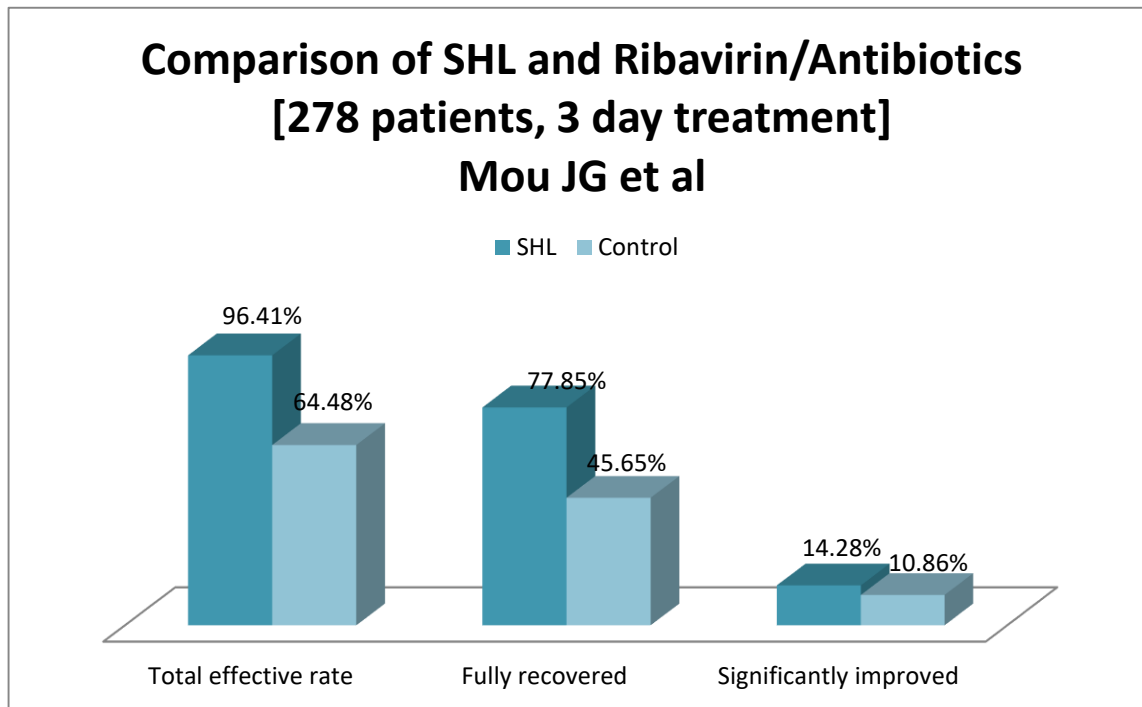


It can be assumed that intravenous is a more direct and effective way to treat disease, however, here it was shown that there was not significant difference. That is, oral was just as effective. Furthermore, oral is more convenient and cost effective

SHL vs Pharmaceuticals (Ribavirin and Antibiotics)

In a trial titled, "Clinical Observation of 300 cases of Shuanghuanglian in Treating Upper Respiratory Tract Infection," Mou YG et al, the result was as follows;

By the end of the 3-day treatment period, the total effective rate of SHL for upper respiratory infection was 96.41%, and the control group was 64.48%. The total effective rate of SHL for amygdalitis (tonsillitis) was 91.66%, and the control group was 84.47%.



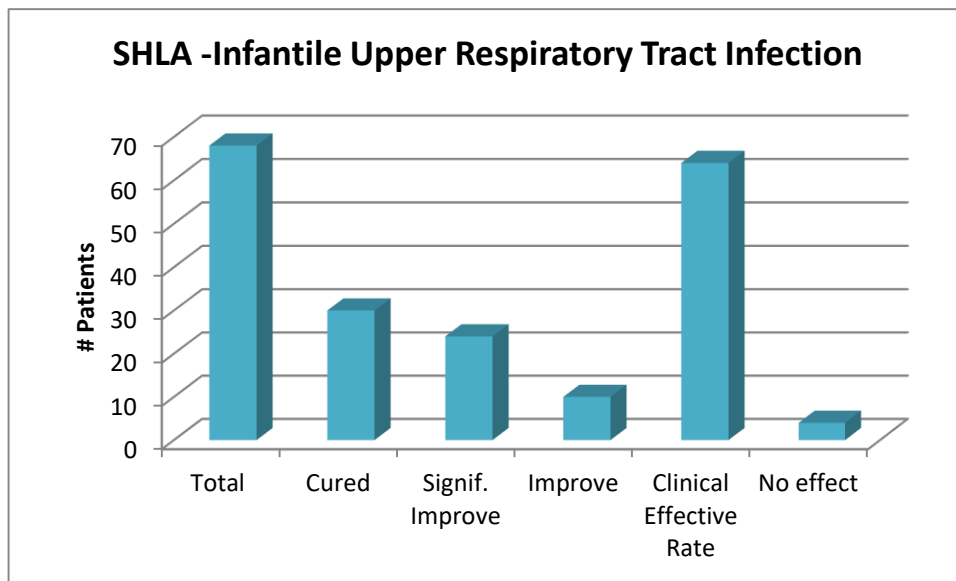
SHL is significantly more powerful than a medically recognized pharmaceutical and antibiotics. Furthermore, pharmaceuticals and antibiotics have known short and long term side effects.

Help For Children

In 2009, the FDA removed numerous flu and cold remedies for children from the market citing that they were dangerous to their health. Finding non-toxic safe answers for children is challenging for parents globally. In a study titled, "Clinical and Experimental Study on Shuanghua Aerosol in Treating Infantile Upper Respiratory Tract Infection" by MA Bing-xiang et al the results were as follows:

For children aged 3 to 13 years using SHL, the clinical total effective rate and percentage cured 94.11% and 44.12% respectively.

The following chart shows the efficacy of SHL for children.



PROPRIETARY CONTROL

Key Problem: Inconsistent Quality of SHL “ShuangHuangLian” in foreign markets

Most natural health products on the market have a problem with inconsistent quality on a batch to batch basis. Another challenge is that there may be degradation of the active ingredient(s) and this degradation is not monitored. There is yet a further problem in that some products may be “spiked” to enhance the active pharmacological ingredient (API) in the formula. If a manufacturer could demonstrate the ability to manage and control each of those industry challenges, then a superior proprietary product would be created.

We have successfully developed a RRLC (Rapid Resolution Liquid Chromatography) method for the evaluation of each ingredient in the PREVAIL/SHL “ShuangHuangLian” formula. This has allowed us to have full control and understanding over the actives in each batch of Defeat, and also ensuring that the right actives are present in the batch and during the product’s shelf life. Compared with conventional HPLC techniques, RRLC has the following advantages:

- Analysis speeds are up to 20 times faster than conventional HPLC (faster manufacturing)
- Achieves higher separation efficiency resulting in sharper peaks and higher signals.
- Uses less mobile phase organic solvent (environmentally) friendly.

To investigate the overall quality of SHL “ShuangHuangLian” products on market, we collected numerous commercial samples on the market from “ShuangHuangLian” manufacturers in China (Note: No other commercial brands exist outside of China) and analyzed the chemical compositions of these products quantitatively by the new Rapid Resolution Liquid Chromatography (RRLC) technique. The HPLC profiles of these samples are shown in Figures 1 to 4, respectively.

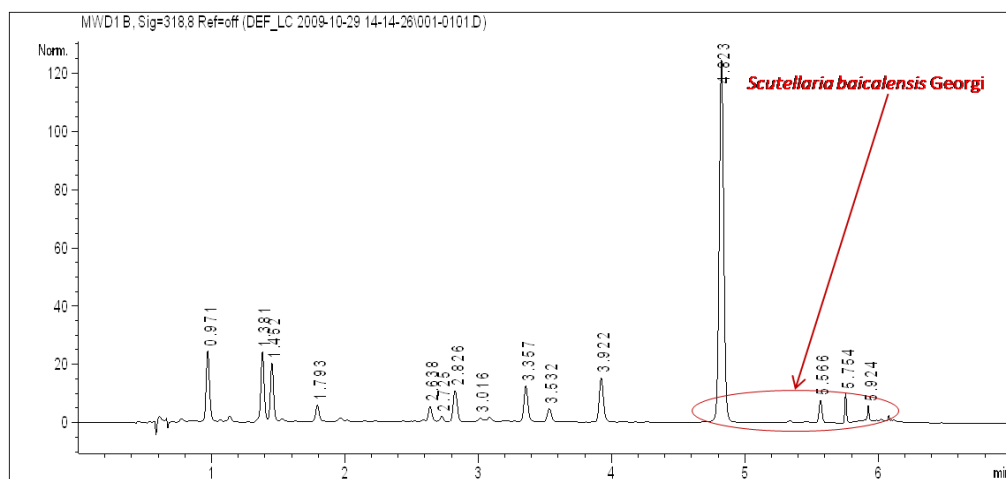


Figure 1- HPLC of “ShuangHuangLian” Liquid Extract Sample 1 from Manufacturer A (batch #: 09092411)

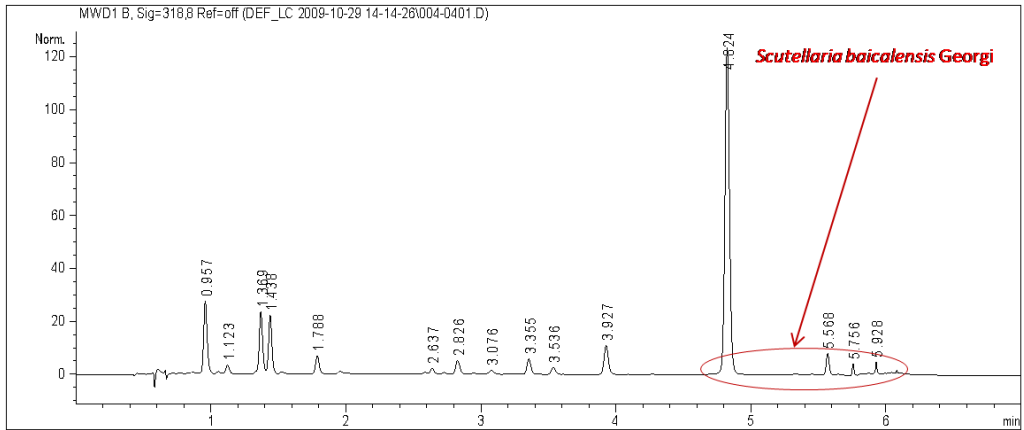


Figure 2- HPLC of “ShuangHuangLian” Liquid Extract Sample 2 from Manufacturer A (batch #: 08050753)

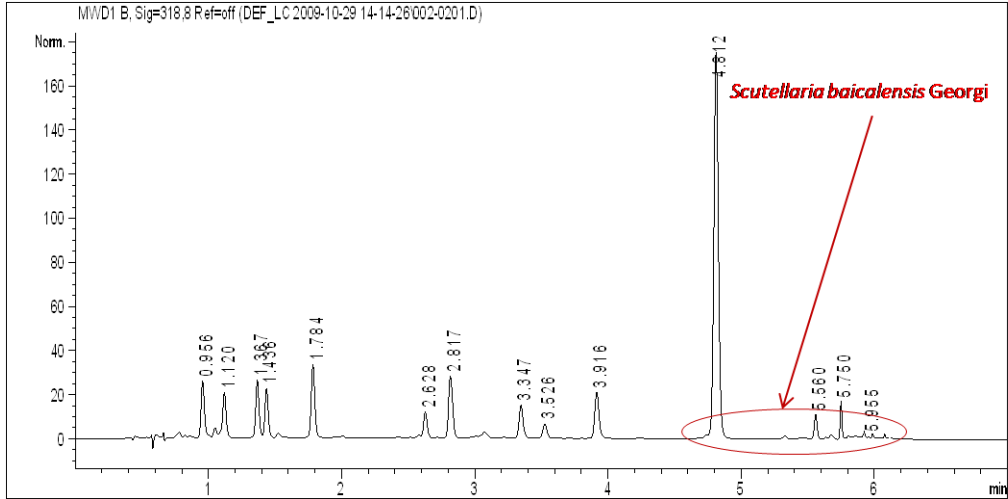


Figure 3- HPLC of “ShuangHuangLian” Liquid Extract Sample 3 from Manufacturer B (batch #: 090204 01)

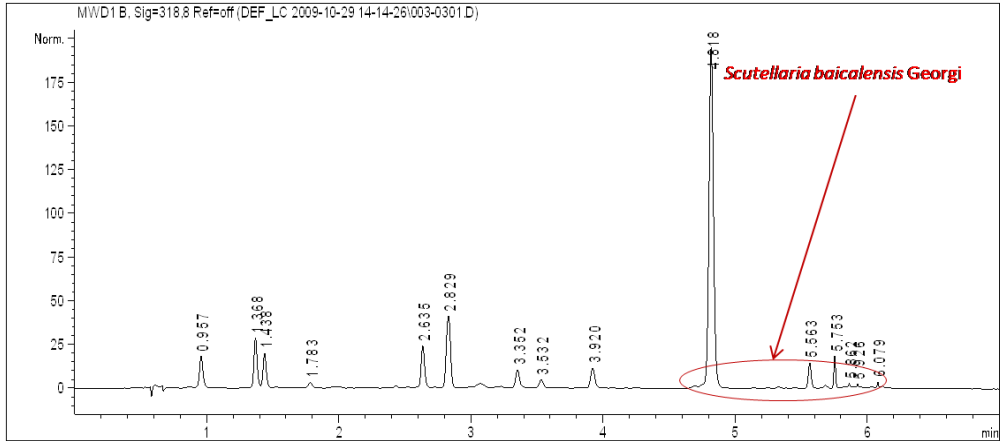


Figure 4- HPLC of “ShuangHuangLian” Aerosol Sample 4 from Manufacturer A (batch #:0907302)

As shown in Figures 1 to 4, these samples contain a significant amount of baicalin, which is considered as the marker compound of *Scutellaria baicalensis* Georgi. As we all know, “ShuangHuangLian” is made of three herbs and baicalin is only one of the three most important and effective chemical constituents in “ShuangHuangLian” with anti-virus activity. Chlorogenic acid and forsythin, which are the marker compounds of *Lonicera japonica* (Thunb.) and *Forsythia suspensa* (Thunb.) Vahl, cannot be detected or are only found at very low concentrations (see low spikes on graphs). These “ShuangHuangLian” products on the market do not have the same chemical composition as a fresh raw herb concoction as it should.

The results of HPLC analysis allow us to identify the industry’s key problems:

1. In the Chinese Pharmacopoeia, baicalin content is the only standard for “ShuangHuangLian” products; therefore, these commercial “ShuangHuangLian” products may be spiked with natural or synthetic baicalin compound to meet the standard.
2. In these “ShuangHuangLian” products, chlorogenic acid and forsythin contents are very low, which brings doubt as to the stability of these active compounds in these commercial products.

All this means that the current SHL products on the market are not necessarily effective because only one of the active ingredients is seen. Upon reading the studies and clinical trials enclosed in this report, it is assumed that all active pharmacological ingredients were present and these actives were responsible for the excellent results. **However, after a product is manufactured and if the actives are missing, it would not be credible to claim the results given by the studies.** Therefore, many SHL products are overpromising and underperforming. Therefore, the best situation is that a manufacturer would be able to verify the actives (APIs) initially and over the shelf life of the product (stability tests). We have created a breakthrough science methodology to do just that, known as Rapid Resolution Liquid Chromatography (RRLC).

Establishment of HPLC Profile for ViralDefeat/SHL Formulation and Production

Over the last several years, we have been actively conducting R&D on all aspects of the formulation and have accumulated very important hands-on experience in the preparation, concentration, and stability studies with two key focuses:

1. The successful establishment of an RRLC method for Defeat analysis within 6 minutes.
2. Our manufacturing techniques were optimized to prepare for a world-class product. As mentioned before, unlike other manufacturers where baicalin content is the only standard for SHL “ShuangHuangLian” products, we have all three active compounds, namely chlorogenic acid, forsythin, and baicalin as standards for the Defeat product line. This state-of-the-art HPLC and RRLC testing techniques ensure that finished products have identical chemical compositions

as the raw herbs without any effective chemical constituents' loss and degradation in the manufacturing process.

The HPLC profile of the Defeat products we manufactured, as seen in (Figure 1), matches the HPLC profile of individual herbs, namely, *Lonicera japonica* (Thunb.), *Forsythia suspensa* (Thunb.) Vahl, and *Scutellaria baicalensis* Georgi (shown in Figure 2, 3, and 4, respectively).

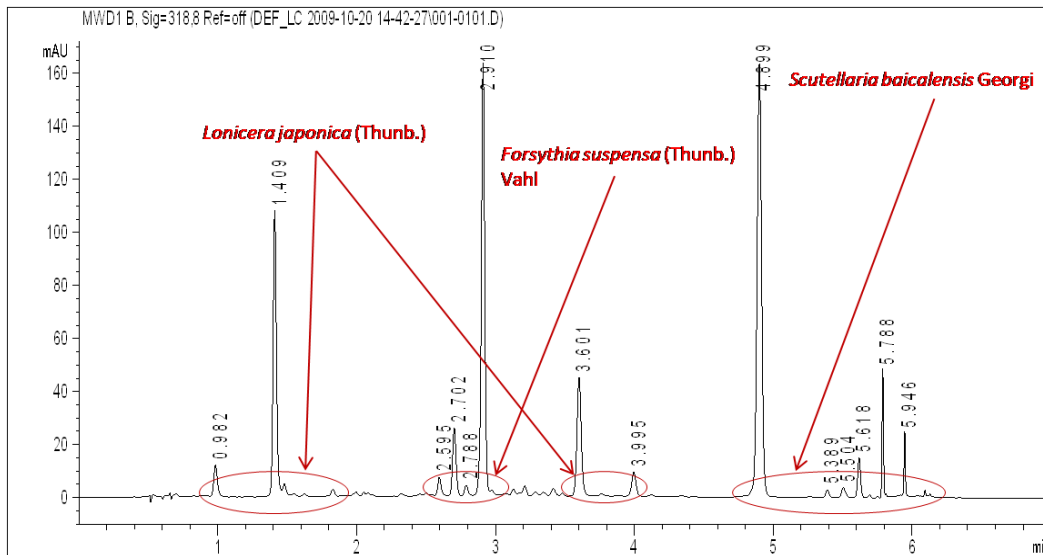


Figure 1 - HPLC Profile of Prevail

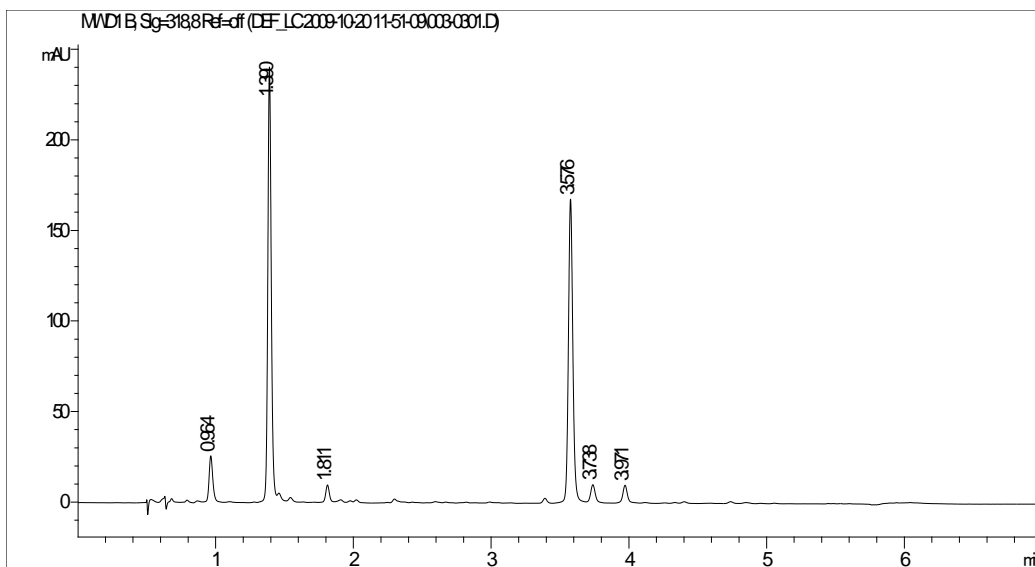


Figure 2- HPLC Profile of *Lonicera japonica* (Thunb.) Herb

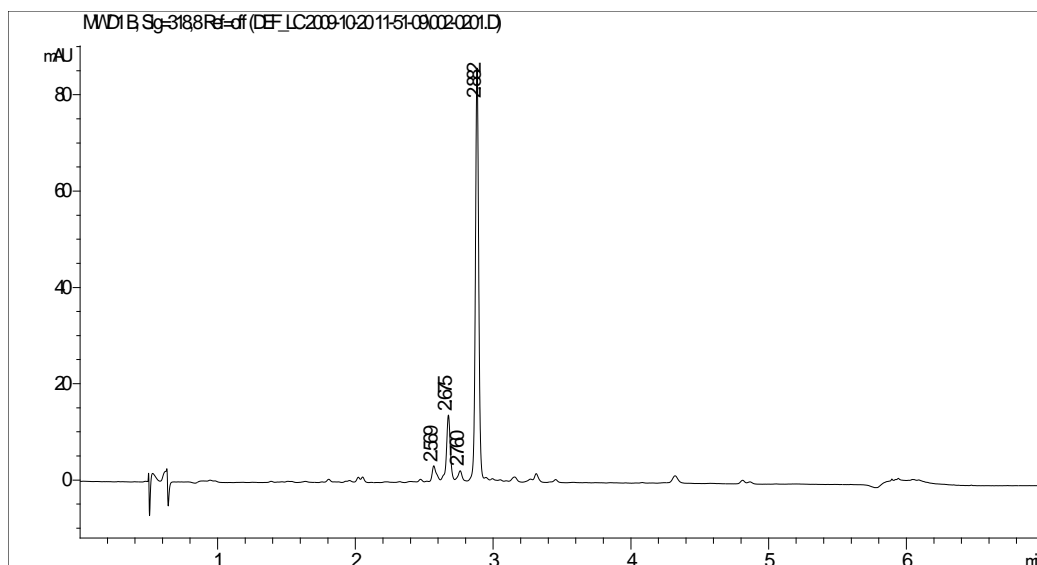


Figure 3- HPLC Profile of *Forsythia suspensa* (Thunb.) Vahl Herb

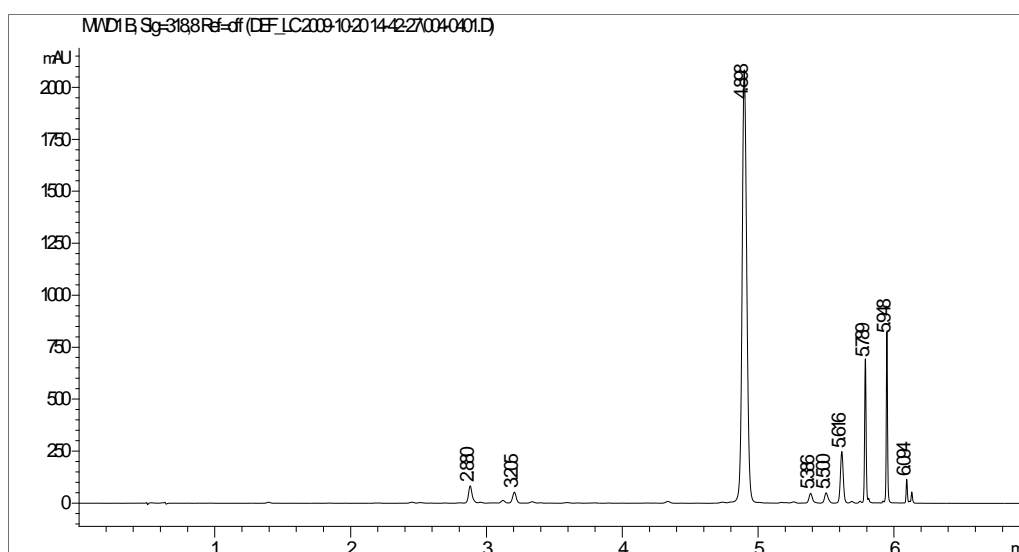


Figure 4- HPLC Profile of *Scutellaria baicalensis* Georgi Herb

Numara has a systematic quality control protocol and standard on the whole manufacturing process which was also set up to ensure the consistency of product quality. Numara has conducted extensive studies on the stability of Defeat to guarantee that finished products meet the product standards and specification over the entire shelf life.

In summary, as a world leader in Phytopharmacology and our breakthrough manufacturing technology, we can ensure the Defeat product line will stand alone in quality and efficacy.

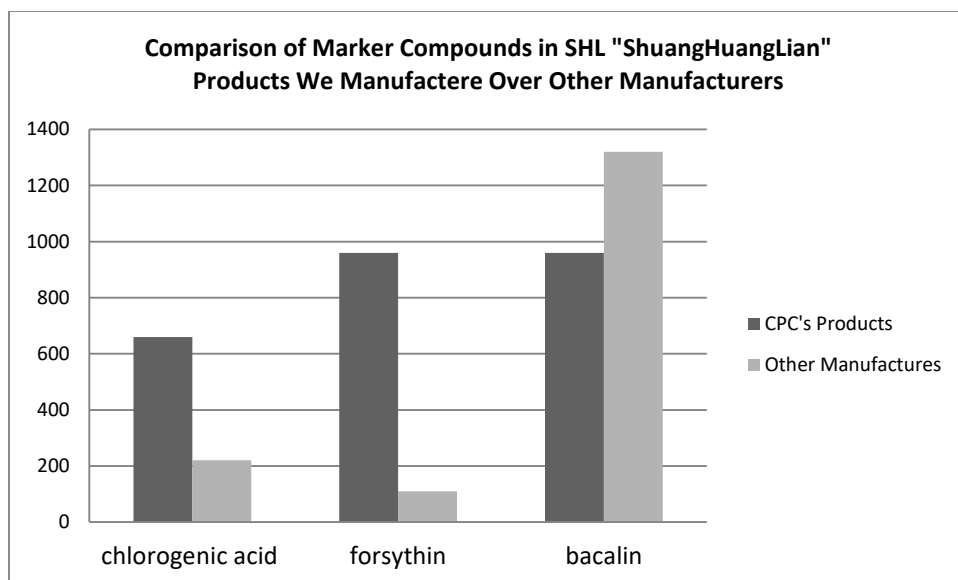


Figure 9- The Comparison of Marker Compounds in SHL "ShuangHuangLian" Products We Manufacture Over Other Manufacturers

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