

Detox Herbal & Ingredient Therapeutics February 2018 copyright

Arctium lappa (Burdock) Root

Arctium lappa is highly regarded in the world of traditional Chinese medicine as a blood detoxifier. The therapeutic components promote blood circulation to the surface of the skin, improving quality and texture of the skin and healing many dermatological ailments (1).

Many studies have demonstrated the antioxidant properties of Arctium lappa and its effect on the detoxification pathways (1,2). One major component of Arctium lappa was found to have strong hydroxyl radical scavenging activity and strong ferrous ion chelating activity. Therefore, assisting in the removal and excretion of toxins (2).

In addition to the antioxidant activity of Arctium lappa, it also possesses strong hepatoprotective properties. One study demonstrated the hepatoprotective effects when successfully treating cadmium toxicity with Arctium lappa extract (3). The extract of Arctium lappa has been shown to exhibit anti-inflammatory response by inhibiting degranulation and release of cysteinyl leukotrienes, histamine and prostaglandins. Furthermore, one study showed extracts of Arctium lappa to be cytotoxic to lung, liver and stomach carcinomas (3).

Taraxacum officinale (Dandelion) Root

Recent studies have provided evidence that Taraxacum officinale reduces inflammation and the risk of disease progression, as well as being liver protective (4,5). Not only has Taraxacum officinale been found to significantly reduce the level of free radicals produced from toxin exposure; by acting as a free radical scavenger, it is also well noted for having strong antioxidant properties. This means that as well as stopping the enzyme cascade in producing reactive oxygen species (ROS) it also binds to existing ROS and excretes them; protecting the body from toxic burden and inflammation (4).

Silybum Marianum (St Mary's Thistle)

Well renowned for being the most studied plant in the treatment of liver diseases, Silybum marianum has been used since the start of time with ancient physicians and herbalists for the treatment of liver, gall bladder conditions as well as protecting against insect bites and infections. Nowadays it remains highly valued for similar actions and its effects have been greatly researched through modern times (6, 7, 8).

Silybum marianum contains 50-70% of bioactive components collectively known as Silymarin (6). These components are what gives Silybum marianum its anti-oxidative, anti-inflammatory, hepatoprotective and restorative properties (6, 8). Studies have found Silymarin to have the ability to bind to toxins and prevent their adhesion to liver tissue. It has also been successfully used in the treatment of toxin-induced liver conditions, viral hepatitis and alcoholic fatty liver disease (6, 7, 8).

In addition, it enhances protein synthesis which is essential for the recovery and repair of cellular damage due to oxidative stress and inflammation (6).

Dose rate: 1-2 large scoops twice daily during illness or when immune function is low.

Dose rate maintenance: 1-2 large scoop every 2-3 weeks for 2-3 days.



Althaea officinalis (Marshmallow) Root

The main constituent in *Althaea officinalis*, which gives the herb its beneficial effects is a substance found mostly in the leaves called mucilage. Mucilage binds with water and forms a gel which has a healing and soothing effect on mucous membranes throughout the body and prevent further irritation. This herb is specifically useful in our DeTox formula to assist the body in recovering from rebuilding itself after infection and toxin exposure (9). In addition, the mucilage reduces resorption of toxins by promoting healthy bowel function and clearance (9).

Althaea officinalis is also highly regarded for its antimicrobial properties. Thus, having a dual effect in not only soothing irritated membranes but also significantly reducing gram-negative and gram-positive bacteria associated with common infections (9). In addition, various studies have shown *Althaea officinalis* to have an anti-inflammatory effect on the body by stimulating phagocytosis and macrophage activity (9,10). Both processes engulf foreign bacteria and dead cells to speed up the healing process, this is thought to be due to its high concentration of the polysaccharide; rhamnolacturonan (9,10).

Trigonella foenum-graecum (Fenugreek) Seeds

As well as the anti-inflammatory, antiseptic, mucilaginous, expectorant and soothing actions, which are contained in *Althaea officinalis* and *Thymus vulgaris*, *Trigonella foenum – graecum* also shares these attributes as well as adding tonic and antioxidative qualities both of which act together to improve the wellbeing and immune resistance of the individual (12,13,14).

The active constituents of *Trigonella foenum – graecum* have been affective in nitric oxide–producing enzymes, alterations of proinflammatory mediator production, and the gene expression of these mediators. The modulatory role in which these constituents play on the inflammatory pathways, aids in the improvement and support of proper of immune and live function by supporting the detoxification processes (12,14). In addition, the high levels of flavonoids which *Trigonella foenum – graecum* contains, such as quercetin and apigenin, add to the anti-inflammatory effect. Significant evidence has shown these flavonoids to inhibit specific proinflammatory cytokines; TNF- α and IL-6; both of which play a pivotal role in immune system regulation by reducing the toxic load on the liver (12,15).

Echinacea angustifolia (Echinacea) Root

Echinacea angustifolia is one of the three species of *Echinacea* originating from North America and Canada. In our DeTox formula we specifically use the root extracts as they have been found to contain the highest level of therapeutic constituents (19, 20). Most commonly *Echinacea angustifolia* is used in the treatment of common colds and respiratory infections, due to its immunomodulatory effects found in the caffeic acid derivatives, polysaccharides and alkamides (20, 21).

In addition to aiding to immune support, studies have suggested constituents of *Echinacea angustifolia* induce the expression of P450 enzymes in phase one liver detoxification (21,22).



Mentha piperita (Peppermint) extract 10:1

Mentha piperita has been traditionally used for the treatment of digestive complaints as well as respiratory tract infections. However, recent research has suggested its attributes to reducing inflammation and allergic reactions. Clinical trials have reported the supplementation of Mentha piperita to improve and increase the efficiency and effectiveness of all liver enzymes, reducing the amount of potential oxidative damage from free radicals (32).

In addition to the effect of liver enzyme function, its high contents of polyphenolic content and antioxidative species enables Mentha piperita to prevent the formation of free radicals and delay the oxidative processes (32, 33).

Glycyrrhiza glabra (Licorice) Powder

The main bioactive component of Glycyrrhiza glabra is Glycyrrhiza acid, which studies have found great medicinal actions associated with this component. The way Glycyrrhiza acid acts is through its effect on reducing the individuals' inflammatory cytokines and modulate the immune system pathways. This action prevents overactivity and oversensitivity of the immune cells, which commonly lead to allergic symptoms commonly seen as skin rashes, and hyperactivity (34, 35).

Similarly to Althaea officinale, Glycyrrhiza glabra also promotes healthy bowel motility; preventing stagnancy of the bowel; toxin resorption and increasing clearance of waste (35, 36).

Like all our supplements these herbs and nutrients have been specifically chosen not only for their individual actions but also for their abilities to complement and support each other in promoting efficient detoxification.

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Zingiber officinale (Ginger) Root

Zingiber officinale commonly used as a culinary spice; however once refined and extracted its active constituents give rise to great therapeutic actions. One of the main reasons Zingiber officinale extract has been chosen in our formulation is due to its effect on phase two liver detoxification. Studies have concluded Zingiber officinale provides a significant increase in all enzymatic activity of phase two liver detox (22). This herb works synergistically with Echinacea angustifolia, and is necessary in the formula to bring both phases of the liver into balance; increasing the efficiency of toxin clearance throughout the body (22).

Separate studies have also found Zingiber officinale to be effective in increasing antioxidant enzymes (superoxide dismutase, catalase, glutathione reductase and glutathione S-transferase) to protect the cell against oxidative stress and mutagenic effects of reactive oxidative species (22,23).

Urtica dioica (Nettle) Leaf

Similarly to many of the other herbs included in this formula, Urtica dioica contains a multitude of flavonoids including; quercetin, caffeic acid, caffeic malic acid and chlorogenic acid enabling their anti-proliferative effect (25). Hence its historic use in the combined therapy with cancer patients. Studies have found evidence to suggest the use of Urtica dioica to have hepatoprotective properties when used on patients with liver injury, in reducing hepatic damage caused by inflammatory proliferation of cells (25, 26). Other in vivo studies have found great improvement of liver enzyme function and production in comparison to placebo (26).

Saccharomyces cerevisiae (Brewer's Yeast)

Saccharomyces cerevisiae is a yeast which has been specifically chosen for its abilities to remove mycotoxins from the body. Research has evaluated the benefits of using Saccharomyces cerevisiae in the removal of toxic metals such as mercury, by binding to toxins in the digestive tract and ensuring excretion (27, 28, 29).

In addition, Saccharomyces cerevisiae is a highly reputable source of complex B vitamins, which are essential cofactors in the body's detoxification processes (28).

Methionine

Methionine is an essential amino acid with a multitude of actions in the body. One of the main actions of methionine is its requirement in DNA methylation (30,31). DNA methylation is a process that is undergone in each cell in the body vital for healthy growth and development. Being a key component in the methylation cycle it is an essential nutrient for correct anti-inflammatory action and prevention of increased inflammatory markers (30). Furthermore, during the methylation process methionine is formed into S-AdoMet (S-adenosylmethionine) which is a key methyl donor in the regulation in hepatocyte growth, differentiation and death (31)



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