# **Triballat**

## **SULFO**DYNE<sup>®</sup>

The only active, stabilised and natural form of sulforaphane.

Thanks to a patented extraction process from broccoli seeds and its unique stabilisation, SULFODYNE<sup>®</sup> makes possible to provide sulforaphane in its active form, which can be directly assimilated by the body. Many sulforaphane properties are already well known:



#### Detox

The body naturally activates its own defence mechanisms against foreign substances that are toxic to the body, called "xenobiotics" (heavy metals, microorganisms, drugs, alcohol, food additives, preservatives, pollutants, tobacco, etc.) but can only partially neutralise and eliminate them, specially when they are in high concentrations. Sulfodyne<sup>®</sup> can help the body to eliminate them thanks to its actions on phase 1 and 2 enzymes involved in the detoxification process of the body.



### Immunity

Sulfodyne® can play a role in both innate and adaptive immunity to enhance the body's natural defence mechanisms. Especially, Sulfodyne® can induce the activity of Natural Killer Cells and of phagocytosis. It can also stimulate the B cell and T cell activity.



### **Glucose regulation**

Control of hyperglycaemia is crucial to prevent and delay diabetes and its complications. It is well recognized that early diagnosis and careful management of early stage hyperglycaemia are essential, along with lifestyle changes. Sulfodyne<sup>®</sup> can modulate the expression of Nrf2 which is known to play an important role in preventing the development of diabetes and its complications by regulating antioxidant and anti-inflammatory response.



### Joints

Joints are complex structures, composed of bones, muscles, ligaments, tendons and other tissues. These structures often cause variable degrees of pain, accompanied by stiffness, swelling and loss of joint function associated with ageing and/or chronic inflammation. Sulfodyne<sup>®</sup> can reduce inflammation and joint damage thanks to different mechanisms like the activation of leukocytes in the joints or the inhibition of T lymphocytes, TNF-alpha or prostaglandin PGE<sub>2</sub>.



### Women health

Women health is very large and encompasses a number of symptoms, time of life or diseases that have long been ignored by medical research like endometriosis, pre-menstrual syndrome, the perinatal period, the menopause, etc. Some of these conditions are linked by an uncontrolled inflammation process and the role of sulforaphane in the reduction of inflammation, notably through the activation of Nrf2 expression, is gaining interest in the management of some women health issues like endometriosis and perinatal period.

### **SULFO**DYNE®

DETOX



Induction of the phase 2 enzymes

Reduction of intracellular ROS content

#### Specific enzyme phase 2 activity (IU/g)



In vivo test on Sprague-Dawley rats fed with a control diet or a diet containing broccoli sprout extract for 6 and 12 weeks. \* significantly different from the control group (P<0.001)





In vitro test on effects of sulforaphane on glucose production in H4IIE hepatoma cells



IMMUNITY

- Enhancement of the antibody production
- Increase of the phagocytic activity of macrophages

#### Effect of sulforaphane on antibody production

### Effect of sulforaphane on phagocytic activity of peritoneal macrophages

Source : Thejass & Kuttan, 2007



In vivo test on BALB/c mice (500 µg of sulforaphane /animal /day) during 5 days before immunization and antibody measurement and macrophage collection (\*\*p<0.001).

• Reduction of inflammation
• Reduction of cartilage and bone damage
• Reduction of joint pain



In vivo test on Collagen induce arthritis model in mice with intraperitoneally injection of sulforaphane (1.5 mM, 12.8 mg/mL/kg) 3 weeks after the induction of arthritis, three times per week during 24 days (\*P < 0.001, \*\*P < 0.01, \*\*P < 0.001)



WOMEN HEALTH

Reduction of the endometriotic lesion volume

Reduction of the adhesion of the endometriotic lesion

Effect of sulforaphane on:



Adhesion score of the endometriotic lesion 4 3 2 # \*\* ## 0 Control group Endometriosis Endometriosis Endometriosis +5 mg/kg + 15 mg/kg with endometriosis + 30 mg/kg Sulforaphane Sulforaphane Sulforaphane 6 weeks

Zhou et al., 2019

In vivo test on endometriosis model in rat with intragastrically administration of sulforaphane (5, 15 or 30 mg/kg) just after the surgery. Volume and adhesion of endometriotic lesion were calculated 3 and 6 weeks after the surgery. \*P < .05, \*\*P < .01 compared to 3 weeks group. # P < .05, ##P < .01 compared to 6 weeks of control group.





### **SULFO**DYNE<sup>®</sup>

### The only active, stabilised and natural form of sulforaphane.

SULFODYNE<sup>®</sup> guarantees an effective and stabilised dose of sulforaphane with optimal bioavailability rather than its precursor, glucoraphanin, even with myrosinase.



Distributed by Becarre Natural in France and Benelux



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