

focus on

Vinca minor

**DR. FERNANDO CALVO,
EXAMINES LINKS BETWEEN
VINCA MINOR AND BRAIN
HEALTH.**



What is Vinca Minor?

Vinca Minor is a plant found in Central and Southern Europe. The extract of Vinca Minor has been associated with improving neurological and psychical symptoms such as memory loss, concentration and attention disorders, dementia, tinnitus, visual disorder, and depression. Belonging to the family of Apocinaceas, the plant has useful medicinal properties. The main substance called vincamine can play an important role in the improvement of cerebral functions. There are other related substances in its composition such as vincine, vincadiforimine and apovincamine, in spite of the fact that not all the pharmacological effects of these substances have been reported. According to the revised norm of medicine classification in Japan, Vinca Minor has been classified as food.

In the West, especially in Europe, this plant has traditionally been used as tea for elderly people who suffer from dementia. Lately, it has also been used as a dietary supplement in the form of capsules and tablets. Vinca Minor, similar to Ginkgo Biloba, is also used as medicine in Europe. As medicine Vinca Minor is indicated as a cerebral metabolism activator for the treatment of memory disorders, concentration, attention, arteriosclerosis, post-treatment of brain haemorrhage, vertigo, visual disorder, etc., stemming from vascular origin.

Performance of Vinca Minor derivatives

The main functions of Vinca Minor can be basically divided into three types:

* **Improvement of cerebral circulation:** Neurons, which form networks of information in the brain, make use of oxygen and dissolve glucose in blood as a resource of energy for their activities. Blood provides oxygen and glucose passing by micro-capillaries through cellular guides. Blood carries dissolved sugar, and erythrocytes are vehicles which deliver oxygen to neurons. In case erythrocytes are unable to pass through micro-capillaries due to arteriosclerosis, etc., oxygen cannot reach neurons which produces the state of ischemia. As a result, the neuronal activities slow down and in the worst case neurons die. Vinca Minor improves the deformability of erythrocytes so that they could pass by micro-capillaries which can increase their width momentarily so that the erythrocytes could pass. Finally, it reduces the viscosity of blood, which inhibits platelet aggregation and thereby improves the micro cerebral circulation. As a result, Vinca Minor makes blood circulate by micro capillaries and be able to transport and provide neurons with oxygen and glucose. The neurons become more active as a result of using these elements as energy resources.

* **Improvement of cerebral metabolism:** Mitochondria, a small organelle inside the nervous cell, plays a role of energy factory inside neurons. This energy is stored in high-energy phosphate bonds in a molecule called adenosine triphosphate, or ATP. Vinca Minor improves the consumption of oxygen and glucose. Increasing blood oxygenation and glucose supply with Vinca

Minor makes it possible to improve the neuronal metabolism. Because of the increase in supply of oxygen and glucose and due to improvement of consumption, mitochondria starts to work in order to produce more ATP. ATP is converted from adenosine diphosphate (ADP) by adding the phosphate group with a high-energy bond. Various reactions in the cell can either use energy (whereby the ATP is converted back to ADP, releasing the high-energy bond) or produce it (whereby the ATP is produced from ADP).

ADP + Pi → ATP = energy storage
ATP → ADP + Pi = release of energy (7 Kcal/mol)
ADP → AMP + Pi = release of energy
Pi - inorganic phosphate

We can state that Vinca Minor increases the emission and incorporation of phosphate, and, as a result, it improves the cycle of energy production based on the transformation and synthesis of ATP. With reference to the transformation of ATP to cAMP we can add that adenylyl cyclase is the enzyme that synthesizes cyclic adenosine monophosphate or cyclic AMP from adenosine triphosphate (ATP). Levels of cAMP decrease due to destruction by cAMP-phosphodiesterase and the inactivation of adenylyl cyclase. The derivatives of Vinca Minor inhibit the enzyme phosphodiesterase. On the other hand, Vinca Minor can activate the enzyme adenylyl cyclase, which contributes to the transformation from ATP into cAMP. Cyclic AMP works as a second messenger to relay extracellular signals to intracellular effectors such as

protein kinase A. Under the effects of Vinca minor it increases the availability of cAMP. As a result, it improves the protein synthesis, hormone regulation, emission of neurotransmitters, etc. Thereby Vinca Minor improves the cerebral performance.

* Function related to neurotransmitters: As a matter of fact, a neuron is not physically bound to another, it is a chemical substance called "neurotransmitter" which makes possible the intraneuronal transmission of information. Such neurotransmitters as Acetylcholine, Noradrenaline, Dopamine, Serotonine, etc. are some of the examples. Vinca Minor improves activities of these substances in general by improving the cerebral circulation and metabolism.

Acetylcholine is synthesized from choline and acetylCoA by the enzyme choline acetylase. The acetylcholine is kept in vesicles and after receiving an impulse of information, it exits vesicle to become loose in the synaptic space. The acetylcholine emitted will be received by receptors and afterwards be transformed into electric signal to follow its pathway of information transmission.

According to numerous theories, acetylcholine is highly related to memory and dementia. The investigations of the brain of those patients suffering from Alzheimer report a low figure of this neurotransmitter. As a matter of fact, the latest medicines for Alzheimer are inhibitors of acetylcholinesterase, a hydrolytic enzyme of acetylcholine, which break the neurotransmitter. The main substance of Vinca Minor, Vincamine lowers the activity of the enzyme acetylcholinesterase. On top of that, Vincamine improves the activity of acetylcholine receptors and as a result, improves affinity of cholinergic transmission in synapse. Noradrenaline is a neurotransmitter which, according to the latest research, is related to the dream cycle - wake up, attention and concentration, memory, learning, depression, etc. Vincamine improves the release of noradrenaline, the cycle of release and incorporation of this neurotransmitter in synapse.

Other indications

Vinca Minor increases micro cerebral and peripheral circulation. According to the clinical research, Vinca Minor proves effective for Tinnitus, hearing and visual disorders. It is also efficacious for depression stemming from circulatory insufficiency and cerebral metabolism.

Key consumers

The consumption of Vinca Minor can be, targeted at:

- * Elderly people: those who already suffer from dementia symptoms.
- * Middle-aged people: with initial symptoms of oblivion and symptoms of dementia at early stages.
- * Young people: students who desire or need to better their cognitive and intellectual capacity.

Dr. Fernando Calvo, PhD is President of Covex
Tel: +34 91 804 4545
A list of clinical data is available from the editor:
e.grindlay@virgin.net

GROUPE
isab

1-2 April
2003
Beauvais
FRANCE

2nd International Agrosanté® Forum
**From Healthy Eating ...
to Healthy Farming**
Where Agriculture, the Food
industry and Health converge

Memory
Concentration
Eyesight
Hearing
Attention

New Ingredient for
improvement of brain functions

**Vinca Minor
Extract**

Vinca Minor
Vinca Minor is a perennial plant indigenous to the Southern Europe. It has been scientifically proven that the extract of Vinca Minor supports regular cerebral blood circulation and improves cerebral metabolism. In Europe, this plant traditionally has been used as tea by elderly people who suffer mental disorders like loss of memory or lack of concentration. Presently Vinca Minor Extract is also used as a dietary supplement in form of capsules, syrup, etc.

Improvement of cerebral metabolism
Improvement of production - consumption of ATP
Improvement of cerebral blood circulation - Supplying neurons with oxygen and glucose
Improvement of neurotransmission

Covex S.A.
Azera 25, Pol. Ind. Sur Colmenar Viejo, 28770 Madrid • Spain
Tel.: +34 91 804 4545 Fax: +34 91 804 3030
E-mail: vtpoc@covex.es - Web: www.covex.com