

Chapter One

The Proving Substance:

The idea of conducting a homeopathic proving of *Nicotiana rustica* was inspired, in part, by reading Jeremy Narby's book, *The Cosmic Serpent*, which explores experiences with the drug Ayahuasca by Shamans of South America's Amazon region. Tobacco is also used by the people of this region and is one of the substances allied with Ayahuasca and used as a tool in their purification ceremonies and explorations of other states of consciousness. The form of tobacco used is *Nicotiana rustica*, which is closely related to *Nicotiana tabacum* (which is potentized to make the remedy Tabacum), the two being the only two cultivated species of tobacco. The main distinction is that *N. rustica* has approximately four times the nicotine that *N. tabacum* contains. Although Tabacum is a well-known remedy in homeopathy, its remedy picture is incomplete, especially in its emotional and psychological aspects.

Therefore, it occurred to me that a proving of a different botanical form of tobacco with greater concentration of nicotine might bring out more themes and symptoms for the study of tobacco-related remedies. Also, given the extraordinary history of the use of tobacco by human beings, and the current cultural "war" against tobacco, its significance as a homeopathic remedy has perhaps not been completely understood.

The Botany and Pharmacology of Tobacco:

Tobacco is a member of the Solanaceae family. There are two cultivated species of tobacco, *Nicotiana tabacum* and *Nicotiana rustica*. Both of these species are tetraploids, the result of a fertile hybrid between two wild species at some time in antiquity, evidently in the Andean region of South America. Almost all American and European commercial tobaccos are *Nicotiana tabacum*. There are some five dozen wild species of *Nicotiana*, three-quarters of them native to the Americas. These species include *N. glauca*, *N. sylvestris*, *N. trigonophylla*, *N. attenuata*, *N. bigelovii*, and *N. petuniodes*. Nicotine content is highest in the cultivated species, and is much higher in *Nicotiana rustica* than in *Nicotiana tabacum*. (10)

Nicotine is the key alkaloid found in tobacco. Extremely addictive and poisonous, one or two drops of pure nicotine can be lethal. In some varieties of *Nicotiana rustica*, the nicotine content of the leaves can be as high as 20 percent. Nicotine is structurally similar to acetylcholine, a neurotransmitter active in both the sympathetic and parasympathetic nervous systems, as well as in the somatic nervous system at neuromuscular junctures. Research has shown that acetylcholine is present in the Central Nervous System (CNS), which gives some neurochemical support for findings that nicotine affects learning. In the CNS, nicotine increases arousal and enhances the learning and performance of simple tasks. Nicotine can act as either a stimulant or a sedative, depending on the amount taken. Nicotine's parasympathetic stimulation of the smooth muscles of the digestive tract has been understood for some time. Its actions on the

sympathetic nervous system are less well-known, but, in addition to its mimicking of acetylcholine, nicotine also stimulates the release of epinephrine (adrenalin) and dopamine, and in smaller amounts, norepinephrine and serotonin. Norepinephrine is a neurohormone chemically related to mescaline. The significance of these neurotransmitters to the alleged hallucinatory effects of tobacco is still inconclusive, although *N. rustica* contains the alkaloid harmaline, absent in *N. tabacum*, which has been demonstrated to potentiate the psychoactive properties of other alkaloids. Toxic effects of tobacco include perspiration, light-headedness, general weakness, tremors, convulsions and respiratory paralysis. (10)

Tobacco's connection to other psychoactive substances was explored during research into the effects of Ahayuasca when toxicologists extracted the active compound from the Banisteriopsis vine from which Ahayuasca is made, naming it Telepathine. In 1957 researchers discovered that Telepathine was actually Harmine, one of several compounds from the beta-carboline family of hallucinogens. Secondary alkaloids called Harmaline and Tetrahydroharmine were also identified. (18).

The action of nicotine on the brain is now being explored in regard to the treatment of Alzheimer's disease. It could be that the harmaline alkaloid found in tobacco is involved in part of that action on the brain. Nicotine acts on the nicotinic receptors for acetylcholine, which exist in the brain as well as in the rest of the body.

Several brain-areas that can be affected by Alzheimer's disease contain nicotinic receptors for acetylcholine, but the number of these receptors seems to be greatly reduced in Alzheimer's disease patients. If nicotinic receptors are blocked in normal people by drugs such as mecamylamine, the subjects do not perform as well in learning and reasoning tests. Conversely, the receptors can be activated by nicotine itself, and tests in animals and humans show that nicotine increases the ability of patients to pay attention to events and to remember new things. Smokers, of course, will not be surprised by this, as it has long been claimed that alertness, attention, memory, and thinking are enhanced by smoking. Nicotine patches are now being developed for use in Alzheimer's disease, to help the mental condition without the serious health problems that accompany smoking. Because nicotine activates receptors in the muscles, intestines and nerves, leading to digestive and cardiovascular problems, several companies are developing drugs that activate the nicotinic receptors in the brain. (19)