

## **Siberian Cedar Pine Nuts Processing Industry in Russia**

### **I. Overview of Siberian Cedar Pine Nuts**

Pine nut is the only nut Russia produces in commercial volumes, and the stocking occurs mainly in the Siberian forests. Siberian cedar(also called Siberian pine, *Pinus sibirica*, or sibirsky kedr in Russian), is a national pride of Russia. The trees are widely grown in Siberia and the Russian Far East. They can live up to 800 years and grow to over 100' tall and reach 2 meters in diameter. Siberian pine nut develops only in the upper part of the crown.



### **II. Benefits and Uses of Siberian Cedar Pine Nuts**

Of the over 20 pine tree species in the world which produces pine nuts, Siberian cedar nut is considered as the most nutritious. Cedar nut has high content of polyunsaturated fatty acids, especially linoleic acids. The pinolenic acid, which is a polyunsaturated fatty acid, is present only in pine nuts and pine oil. Cedar nut also has high content of amino acids, especially argenine. Nut protein is easy to digest. Cedar nuts contain Vitamin E, B1, B2, B3, A and D. 100g of cedar nuts is sufficient to meet an adult's

daily need for amino acids, as well as copper, cobalt, manganese, and zinc.

The nuts are very good when raw, but also can be roasted in the [nut roasting machine](#).

Many variants are known for preparing dishes using cedar nut kernels. Cedar nuts contain about 60% oil, they are therefore pressed by [oil press machine](#) to obtain cedar nut oil. Cedar nuts can also be used to produce cedar cream and milk. Cedar nut cream is twice as rich as dairy cream in fat content. Cedar nut, oil, cream and milk have been used since the old days for the treatment against various diseases.

Cedar nut shells can be pulverized to be used as animal feed. The shell is a component for some balsams and tinctures. Infusion of cedar nut shells has astringent, analgesic, anti-inflammatory effect. In folk medicine, the infusion is used against hearing disorders, diseases of liver and kidneys, hemorrhoids, salt deposits, gastrointestinal disturbances, blood diseases, osteochondrosis, arthritis, etc. The infusion is also used externally as a means of depilation.

### **III. Pine Nuts Harvesting and Shelling Processes in Russia**

#### **Pine nuts harvesting**



Cedar nut takes two years to mature and a good harvest happens approximately once every four years. Collecting pine nuts is source of income in many rural areas. During the fall, the collectors go off into the forest for a few weeks to pick cedar

nuts. The work of pine nut gatherers is toilsome. They live in tents and it gets cold at night.

The cedar cones are collected as “windfall” cones from the ground. This ensures that only the ripe nuts are harvested, which has the highest nutrient and oil content.

Sometimes the cones are gathered by striking the trunk with a large wooden mallet,

which causes both mature and immature cones to fall to the ground and the tree is damaged.

Pine nuts can stay inside the cones with the vitality retained for over a decade. For the sake of oil production, the nuts should not be removed from the cones until it's time to press the oil. However, as it is inconvenient to transport the nuts within the cones, the removal of the nuts often takes place in the forest, using special devices. The mixture falling out of the cracker are separated by using a special type of sieve in the shape of a trough with holes. After arriving back home, the nuts are cleaned and dried and then stored or sold to dealers. Cedar nuts must be kept in a refrigerator, usually with a shelf life of 6 to 12 months. If frozen in a freezer, they can be kept indefinitely. Usually, the in-shell nuts are sold to local nut shelling factories or exported to China, where they are shelled and sent overseas. They are usually marketed shelled, and sometimes in the shell.

#### **Pine nuts shelling processes**

In the pine nuts shelling factories, using a specialized [pine nuts shelling machine](#) which can crack the shells open upon impact with no damage to pine nut kernels. After elaborate cleaning and selecting, a portion of



the nut kernels are packed(usually vacuum-packed to avoid oxidation) and ready for shipment. The remainder are further processed to produce cedar nut oil. As the pine nuts contain some volatile oils which start evaporating after shelling, it is necessary to press the oil immediately after the nuts are shelled.

#### **IV. Pine Nut Oil Production Methods and Benefits of Pine Nut Oil**

##### **Cold pressing of pine nuts oil**

In cold pressing, the oil is pressed by wooden presses. During the processing, the oil is not permitted to come into contact with metal, which will immediately oxidize the

oil and reduce its healing properties. The method of cold pressing is the most costly, however, the oil thus obtained is of the highest quality and is widely used in traditional medicine and cosmetology.

In fact, wooden press is not well suited for large-scale oil production. Most pine nut oils are pressed using steel oil press machine. On the one hand, by using wooden presses, part of the oil would penetrate the wood pores and eventually go rancid, while steel has no pores and does not spoil. On another hand, the pressure applied by wooden presses is much lower than that in hydraulic steel press machine-consequently, much less oil is squeezed out.

The byproduct of pine nut oil pressing is pine nut meal or flour. Cedar flour contains high levels of vitamin C, B1, B3, E. It contains high amount of easily digestible vegetable protein, ideal for vegetarians. Cedar flour is perfect for adding to flour for baking. It is also mixed in milk or yogurt, etc.

### **Hot pressing of pine nut oil**

Hot pressing often renders high oil yield. There are several methods of hot pressing. The most common is separating the oil from the heated crushed kernels while rinsing with hot water and hot pressing. This method is less expensive, but due to the high temperature many wholesome substances have been destroyed. The oil thus obtained is for culinary use.

### **Extraction of pine nut oil**

Most often, an extraction method is used for producing the cedar nut oil. The cedar kernels are first crushed and then drenched with a special compound. From the solution obtained, something is extracted which is later called cedar nut oil. The oil thus obtained is very cheap, and provides huge profits to the distributors.

### **Benefits of Cedar pine nut Oil**

Cedar nut oil contains a large quantity of polyunsaturated fatty acids, including

linoleic, oleic, pinolenic acid, palmitic, and stearic, etc. The

proteins of the oil include

19 amino acids, 70% of which are essential. Cedar nut oil is a good

source of Vitamin A, B1, B2, B3, D, E, and F. It is very rich in Vitamin E, with the amount five times greater than in the olive oil. It is also very rich in vitamin F, which is three times greater than in fish oil. The oil is a rich source of trace elements, such as phosphorous, magnesium, manganese, copper, zinc, cobalt and iodine.

Siberian pine nut oil makes a tasty salad dressing. The oil should be stored at a low temperature or kept in a refrigerator. Keep the oil away from light and avoid any contact with metal. Cedar nut oil has virtually no contraindications. It has been widely used for the treatment of gastritis and ulcer diseases of the stomach and duodenum, nervous disorders, eye disorders, liver and kidney diseases, tuberculosis, cardio-vascular diseases; to eliminate chronic weakness syndrome; to increase physical and intellectual ability to work; to normalise digestion and to strengthen immunity. Cedar nut oil is also applied externally giving the effect of rejuvenating the skin, making it supple and smooth, and also helps to treat various skin diseases. Cedar nut oil added to the hair can help eliminate dandruff, combat brittleness and hair loss.

