

## **Salt peter Production in Gokayama**

Traditionally, one of the main industries in the Gokayama region was the production of salt peter (potassium nitrate) from the mineral niter, an essential ingredient in gunpowder. The salt peter industry operated for over 300 years during the rule of the Kaga domain in Gokayama, growing exponentially after the introduction of European matchlock guns in 1542. The production of salt peter in the area was kept secret even from the shogunate (the ruling military leadership of Japan) in order to strengthen the defense of the Kaga domain, which bought up large amounts of salt peter every year. Gokayama was an ideal location for secret niter production as the area was isolated and much of it remained unexplored.

Salt peter was created in a hole up to 2 meters deep under the *irori* fireplaces of the *gassho-zukuri* (steep thatched roof) houses of the Gokayama region. The hole was filled with a mixture of materials including straw, soil, mugwort, and silkworm excrement, then left to ferment for around five years. The *irori* fireplaces were used to keep the materials warm during the fermentation process, and the materials in the hole were mixed together once a year to expose them to air and to add in extra ingredients. Over time, calcium nitrate formed in the soil through the nitrification of bacteria. To extract potassium nitrate from the soil mixture, water and soil were mixed together, and the water into which the calcium nitrate had dissolved was concentrated through heating. Grass and wood ash were then added to the concentrate to remove impurities. The potassium carbonate contained in the ash reacts with the calcium nitrate in the concentrate to form potassium nitrate and calcium carbonate. The calcium carbonate precipitates because it is insoluble in water. The liquid is then filtered, boiled down and condensed, and then cooled to obtain coarse salt peter crystals. The collected salt peter crystals were sold to the Kaga domain and delivered to their warehouse in Kanazawa. After the abolition of the feudal domains in 1871, the Kaga domain ceased buying salt peter. During the Meiji era (1868–1912), cheap salt peter was imported from Chile, resulting in a decline in local production.

Today, visitors to Gokayama can visit the Salt peter Museum, also known as Ensho no

Yakata, in Suganuma village. The museum is located in a *gassho-zukuri* house that has been remodeled to showcase the materials and tools used in the production of saltpeter. Visitors can also learn more about the history of guns and gunpowder production in Japan, which date back to the Portuguese in 1542.