MAKING GOAT MILK COLBY CHEESE

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Colby cheese is a sub-variety of Cheddar cheese and one of only a few cheeses native to the United States. It was originally made of cow milk in Colby, Wisconsin. Ripened Colby cheese has softer body and more open texture than Cheddar cheese. The moisture content of Colby cheese ranges from 38 to 42%. In recent years, goat milk Colby cheese has evolved into one of the most favorite goat cheeses. Because of a washing step implemented in the manufacturing process, goat milk Colby cheese possesses a milder taste and flavor and a smoother body and texture compared with goat milk Cheddar cheese. It is a delightful exotic goat product enjoyed by people who are not used to goat milk cheeses, as well as by many ethnic groups and goat enthusiasts. This cheese has become a popular goat milk product for our extension programs to promote dairy goats in elementary and middle schools, on field days, and in county fairs.

When manufacturing Colby cheese, it is a good idea to use at least five gallons of goat milk per batch in order to have enough curd for pressing later on. Our experience shows that a finished Colby cheese to milk ratio of 0.9 to 1.0 lb/gallon can be expected. This ratio depends on the fat and protein content of goat milk and will vary among breeds. The following manufacturing procedure is recommended for a batch of 4 gallons.

The goat milk to be used should be fresh (preferably less than two days old), clean (strained), and sanitary (total bacteria count < 100,000/mL). Most importantly, the milk should be antibiotic-free. Antibiotic residues in milk will not only present a health risk to the consumer but also inactivate the cheese culture (starter bacteria), resulting in slow or no fermentation at all.

The milk for Colby cheese manufacturing should be pasteurized. Colby cheese is usually consumed at 2 to 3 months of age while the legal requirement for ripening raw milk cheese is at least three months. Pasteurizing a batch of milk is commonly carried out at 145°F for 30 min. This process kills all pathogens and almost all organisms present in the milk. Alternatively, a high temperature and short time (HTST) technique (i.e., 161°F for 15 sec) can be used. However, an elevated temperature for a prolonged period of time will destroy some of the milk proteins, resulting in a lower cheese yield.

After pasteurization, the milk is cooled down to 88 to 90°F using ice water or tap water. When the desired temperature is reached, add 2 g (approximately 1/2 teaspoon) of Direct Vat Inoculant (DVI) starter. This powdered starter is packaged in a pouch and can be stored in a freezer for up to
two years. It is a good practice to dissolve the powder in clean tape water (1:40) before pouring it into milk for a uniform mixture. If desired, a liquid mesophilic starter culture can be used with a ratio of one ounce to one gallon of milk (approximately 1%; weight/weight).

Mix the starter thoroughly into milk by stirring vigorously. Let the milk set undisturbed for one hour while keeping the temperature at 88 to 90°F. This process activates the culture bacteria and is known as milk ripening.

Measure 5 mL (approximately 1 teaspoon) of liquid cheese rennet into a cup and dilute it with one cup of tap water. Liquid rennet can be substituted with one rennet tablet dissolved in half a cup of clean water. Important: start stirring the milk first before adding the diluted rennet into the milk. Keep stirring until a uniform mixture is achieved (usually within a few sec). Caution: excessive stirring will disturb the initial curd formation and thus should be avoided. Then, leave the milk to set for 45 to 60 min to form curd while keeping the temperature at 88 to 90°F.

When a clean break curd develops, cut the curd into ½ inch cubes with a curd knife. Leave the curd undisturbed for 5 min, allowing the newly cut surfaces of the curd cubes to form a thin film. This will help keep the cubes intact during the next few steps.

While gently agitating, heat the curd slowly to 102°F in next 30 min. As a rule of thumb, increase the temperature by 2°F every 5 min. Heating the cubes too quickly will seal their surfaces and cause the whey to be retained in the curd, resulting in a high moisture cheese. Caution: temperatures higher than 104°F will injure or even kill the culture bacteria.

Cook the curd for another 30 min at the same temperature with steady agitation to remove the whey from the curd. Before draining, stop stirring for a few min to set the curd on the bottom of the vat or pot. Drain the whey to the curd level and immediately add tap water to cool the temperature down to 80°F. Stir the curd for 15 to 20 min more. The whole process is called washing curd. It helps develop a unique flavor and a characteristic body and texture. However, a prolonged washing at this temperature will cook more whey out and result in a lower moisture cheese. Drain the whey completely and pour the curd into a perforated colander lined with cheese cloth to drain further for 20 min.

Pour out the curd in the vat or a pan and break the curd into particles. Add 3 to 3.5% (curd weight) salt (non-iodized salt preferred). Mix the salt thoroughly with the cheese curd. Put the salted curd into a cheese mold lined with cheese cloth and press at 20 pounds per square inch (PSI) for the first hour. After flipping the cheese block, increase the pressure to 30 PSI and press it overnight (12 hours).
Take the cheese block out of the press. Remove the cheese block from the mold and the cheese cloth. Place the cheese in a well ventilated cooler or a refrigerator and let its surface air-dry for 1 to 2 days. Cut the cheese into desirable wheels, wedges, or blocks and wax them with a food-grade cheese wax (red or yellow) by dipping three times. The temperature of wax should be around 170 before waxing.

Ripen (age) the cheese in a cooler or refrigerator (45 to 50°F) with a moderate humidity for 2 to 3 months before consumption. An uncovered cup or pot of water can be placed in the cooler or refrigerator to create the desired humidity.

Approximately 4 lb of Colby cheese (before waxing) can be expected from 4 gallons of goat milk. The finished Colby cheese should have a mild pleasant flavor and a soft smooth body and texture.
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