Making Casein Plastic from Milk

Currently, there are many environmental problems caused by conventional plastics. Casein plastics can be broken down into water and carbon dioxide by the action of microorganisms. Therefore, we thought these plastics would be effective as a solution to plastic-related environmental problems. We studied which milk is suitable for the production of casein plastics. We focused on milk fat of 8 different milks and the drying methods used in our production of casein plastics. Afterwards, we tested the strength of our casein plastics. The purpose of the strength test was to investigate how casein plastic strength varies depending on the drying method used or the percentage of fat in milk. The results were that no consistent tendency was found for the strength of casein plastics relative to drying methods. We asked infrared spectroscopy experts to analyze the structures of our plastics. They found many ester bonds present in the structure of our plastics. Considering our results, we thought that Hyogo Pasteurized Milk is the most suitable for the production of casein plastics.