

学 位 論 文 要 旨	
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題 目	Study on cultivation and ingredients of the medicinal plants of Asteraceae and Umbelliferae native to Taiwan (台湾原産キク科およびセリ科薬用植物の栽培および成分に関する研究)
<p>For a sustainable production of crude medicine materials, a technological revolution that leads to stable high yield and high quality is important. In recent years, there have been concerns regarding steep price rise of crude medicines following the general increase of commodity prices and the exhaustion of wild plant resources following the increase in crude medicine demands in China. Tropical regions have high plant diversity, making these regions important for securing plant resources. However, there are very few research reports regarding variety selection and the establishment of cultivation technology involving the domestication of crude medicines in tropical regions. This study researches chrysanthemum flower and <i>Bupleurum kaoi</i> Liu. (<i>B. kaoi</i>) to investigate the optimal variety selection for domestication in tropical regions as well as the establishment of fertilization management and the environmental stress response.</p> <p>First, we picked native Taiwan chrysanthemum flowers from their natural habitat, and cultivated them in southern Taiwan, to select the most optimal variety based on the grow, the dry matter and the flavonoid content of the flower head. <i>Chrysanthemum indicum</i> (<i>C. indicum</i>) in each parameter has high value, and contains a high amount of luteolin, which is the major component. Furthermore, it showed that the optimal temperature for the flavonoid content of the chrysanthemum flower head during the drying process. This step was important, and the optimal temperature was 50°C.</p> <p>For domestication, establishment of fertilization management is important. Nitrogen is an especially important element. Many soil in tropical regions are relatively less fertile, so in order to perform <i>C. indicum</i> domestication, fertilizing the soil using nitrogen concentration of 10 mM is optimal. <i>B. kaoi</i>, whose roots are used as crude medicine materials. Using nitrogen concentrations of 10 mM for the cultivation of them improve the growth, the dry matter and roots major components. Furthermore, nitrogen foliar application 8mM in addition to sufficient soil fertilization showed an effect in increasing the amount of blooming flowers and secondary metabolites in the flower head. In tropical regions, damage due to waterlogging is severe. The dissolved oxygen is lower than 5.0mg L⁻¹ this can cause negative effects on the growth, photosynthesis and dry matter in <i>C. indicum</i>.</p> <p>From the results, this research has clarified the variety selection, fertilization management, and environmental stress response for crude medicine cultivation in Taiwan. This has the potential to provide information that will contribute towards the domestication of crude medicine in tropical regions, which was cultivated in temperate regions or harvested in the wild. Furthermore, crude medicine with its high quality and high added value may become a primary industry in tropical developing countries as well as becoming the key to reduce the poverty rate of farmers. This research can become a foundation for crude medicine cultivation in tropical regions and assists with fundamental questions for applied research. In addition, we conduct research that takes into account the variety selection that has high stress resistance and fertilization management that aims for restoration post environmental stress.</p>	