別紙２

Results report

１． Title of Research and Development： "Improvement of the accuracy for differential diagnosis against viral infection – DENV, CHIKV, and FluV- by spreading of high quality RDT in India

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４． Results of Research and Development:

We aim to develop the rapid diagnosis test kits for dengue, chikungunya and influenza viruses and enlighten importance of early diagnosis. Patients with these diseases showed similar symptom at early stage; however, they have to receive different treatments.

1. Development of a diagnosis kit for dengue virus infection, epidemiological study and virological study: To make a good rapid diagnosis kit, most important issue is to obtain good antibodies which react efficiently with pathogens. We immunized mice with dengue virus infected cells. After several trials, we changed the protocol for immunization and obtained hybridomas producing antibodies. We stared characterization of antibodies. For epidemiological study, virus characterization is important; however, there is no method to classify virus in virulence using cultured cells. To solve this problem, we have established a new approach. Dengue viruses exhibited various virulence in mice lacking type I and II interferon systems. This approach will be useful to understand virulence.
2. Development of a diagnosis kit for chikungunya virus (CHIKV): Modified test stript (stick type) kit was produced. We had meeting with Indian counterpart about selection and criteria for evaluation. Indian counterpart performed a part of sequence analysis of CHIKV. For virus characterization, we performed to develop mouse model for arthritis. In India, there are many cases of co-infection between dengue virus and CHIKV, therefore, we assumed that co-infection may exacerbate arthritis because co-infection possibly enhances levels of cytokines compared with single infection with CHIKV. By using mouse model system, we will test this hypothesis.
3. Evaluation of influenza kit: For evaluation of kit, it is important to compare with conventional method. For this, we invited Indian young researchers to Japan and had training for diagnosis. During this year, a new matter of concern arose. In India, there were many death cases by H1N1 infection. In other countries, it was not observed, which means this was India-specific observation. Indian government wants to investigate. So Dr. Gaind’s team at Safdarjung Hostipal has establish diagnosis to distinguish H1N1. For this reason, Indian young researchers learnt diagnosis of H1N1 during their stay in Japan. Additionally, Japanese side and Indian side had agreement to examine a new rapid diagnosis method based on nucleic acid detection for H1N1.

Regarding international exchange, we invited two young researchers to Japan from January to March and two investigators to join symposium and have meeting. By presentation each other, we had exchanged information on epidemiological situation of infection diseases and idea. At symposium, four Japanese researchers and four Indian researchers gave presentation about progress of projects.