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The diagnosis of malaria using colorimetric aptasensor with gold nanoparticles

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Malaria, which is spread out in broad tropical area, is the major cause of death in traditional high-risk region of malaria. A main cause of the disease is parasites of the genus *Plasmodium*. Herein, we have developed an effective diagnostic method of malaria from genus *Plasmodium*. We have constructed a detection method of *Plasmodium lactate* dehydrogenase (pLDH), which is a biomarker for malaria. The important interaction of the proposed method is the affinity of pL1 aptamer against both *Plasmodium vivax* lactate dehydrogenase (PvLDH) and *Plasmodium falciparum* lactate dehydrogenase (PfLDH), which are family of pLDH. Using the pL1 aptamer, partner polymer and gold nanoparticles, we could establish a colorimetric detection technique of pLDH species. Additionally, the selectivity test confirmed that the aptasensor has high specificity for the targeting proteins over other non-targeting proteins. Furthermore, to prove the effectiveness of the aptasensor to malaria diagnosis, the target protein pLDH from blood samples of the malaria patient were also analyzed. Great improvement of this aptasensor is that it can diagnose malaria within short time by simple method. To conclude, we expect that the developed system based on pL1 aptamer for sensing of pLDH can provide an effective diagnosis of malaria.

Biography

Hyungjun Youn has completed his BS at the age of 21 years from Pohang University of Science and Technology (Postech). And he is a graduate student in the department of chemistry, Postech.

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