

## Determination of Unconjugated Estriol by Using Surface Plasmon Resonance (SPR) Biosensor

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Unconjugated estriol (uE3) is one of the estrogen hormone produced in significant amount during the pregnancy. It can be measured in maternal blood and its level can be used as a marker for screening the down syndrome. An abnormally low level of uE3 indicates a chance of baby suffering from a down syndrome, lower than 0.68 ng/mL in the second trimester. The main objective of this work is to develop the technique for maternal serum screening for uE3 by using surface plasmon resonance (SPR) technique. uE3 is a small molecule and it is very difficult to detect directly by SPR; therefore, the inhibition assay was chosen for the study. The inhibition assay was done by mixing uE3 sample with known amount of the antibodies. The free antibodies bind with the uE3 in the premixed sample causing the reduction of the free antibodies. Therefore the higher the uE3 presented in the sample, the lower the free antibodies in the mixed sample. The amount of the uE3 was quantified against the standard curve. The possibility of regenerating the sensor chip up to 3 cycles were achieved.

**Primary authors:** BOONPERM, Kitti (Materials Science and Engineering Program, Faculty of Science, Mahidol University, Bangkok, 10400, Thailand); SRIKHIRIN, Toemsak (Department of Physics, Faculty of Science, Mahidol University, Bangkok, 10400, Thailand)

**Co-authors:** WONGSAKULYANON, Apirom (Department of Pathology, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, 10400, Thailand); SUTAPUN, Boonsong (School of Electronic Engineering and School of Telecommunications Engineering, Suranaree University of Technology, Nakhon Ratchasima, 30000, Thailand); HOUNGKAMHANG, Nongluck (Materials Science and Engineering Program, Faculty of Science, Mahidol University, Bangkok, 10400, Thailand); WANGKAM, Thidarat (Department of Industrial Physics and Medical Instrumentation, Faculty of Applied Science, King Mongkut's University of Technology North Bangkok, Bangkok, 10800, Thailand); PRAPHANPHOJ, Verayuth (Center for Medical Genetics Research, Rajanukul Institute, Bangkok, 10400, Thailand)

**Presenter:** BOONPERM, Kitti (Materials Science and Engineering Program, Faculty of Science, Mahidol University, Bangkok, 10400, Thailand)

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