

P-NAS Lab IITH- Dept. of BME

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Cervical cancer is one of the leading causes of cancer-related death in women globally. Cervical cancer has a long pre-clinical phase without any symptoms and can only be diagnosed with rapid screening. The current procedures like Pap smear, biopsy, HPV gene testing are expensive, requires multiple medical appointments and are not very comfortable affecting the frequency of screening. We have developed “C-ColAur” technique as an affordable alternative. This is a colourimetric technique for the screening of cervical cancer using the in-situ formation of gold nanoparticles. This technique differentiates the cancerous and healthy samples by a simple change in colour. In this technique, gold nanoparticles formed in the presence of cervical-vaginal fluid showed colour (blue/ colourless) specific to the clinical sample (healthy/cancerous). This difference in

colour respective to the sample was due to the size of the gold nanoparticles formed. Gold nanoparticles formed with healthy sample (Control) were 15-20 nm in size while nanoparticles formed with cancerous sample (Test) were 250-300nm in size. This difference in the size of the nanoparticles resulted in different colours allowing the detection of the cancerous sample. This technique neither requires pre-processing of the sample nor needs any equipment or medical expertise for analysis. We have validated the technique using 62 samples collected from healthy and cancer affected women and compared it with the conventional screening procedures like Pap smear and biopsy. “C-ColAur” showed a diagnostic sensitivity of 96% and can also be used as a prognostic indicator. This technique with read-out time less than a minute can be used for clinical or point-of-care applications.”

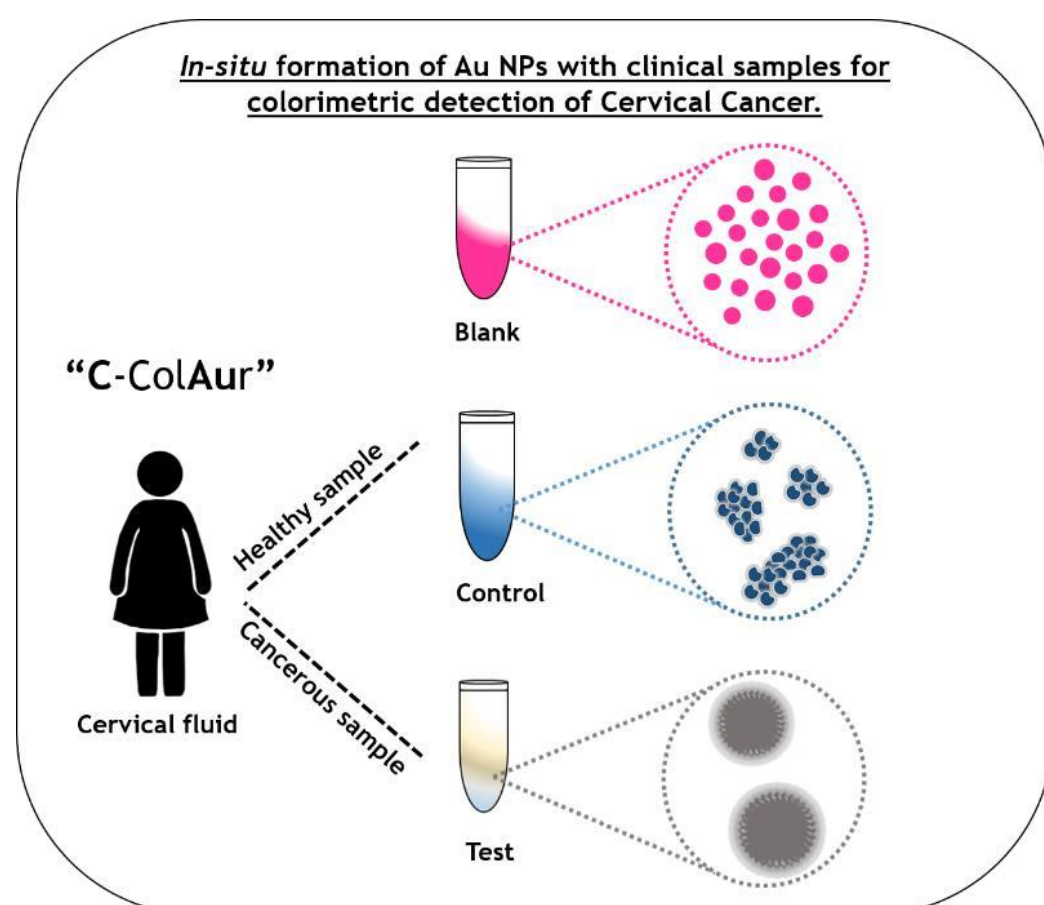


Figure 2: Schematic showing the colorimetric detection of cervical cancer using “C-ColAur” technique

Link: <https://pubs.rsc.org/is/content/articlepdf/2020/na/d0na00686f?page=search>

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