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## Corresponding to climate change and its effects on public health by developing detection method of endocrine disrupting chemicals (EDCs)

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The objective of the study is to suggest a novel detection method in endocrine disrupting chemicals (EDCs) in accordance with climate change and its effects on public health. Substantial and uncertain channels of exposure routes of EDCs caused by climate change are regional and local levels of complication. The correlation between EDCs and climate change is currently an ongoing process of research, however, it is determined that their relation to the public health is a prolonged matter to develop and initiate the prevention strategies. Even a low level of EDCs concentration takes negative effects into hormone secretion, male and female reproduction, growth inhibition, cancer induction and immune system in human health. Therefore, this study is to develop a simple colorimetric sensor film that analyzes EDCs concentration induced by virus-based aerial detection method in regional and local levels. The colorimetric sensor film which is embedded with self-assembled bacteriophage detects concentration of EDCs based on a change of color. The peptide of the bacteriophage generates as a receptor with its reactivity to the targeted chemicals. In addition to the characteristics, specific DNA sequence determines selectivity and sensitivity of the sensor film. The swelling and de-swelling of the nano-structure according to the description of humidity, temperature and chemicals, diversify the reflection of visual light that results in color change. As a result, we can create the distinct nano-structure with specific arrays that can react to selective EDCs and visually assess the level by RGB analyzer. The core advantage of this colorimetric film is that genetic engineering of bacteriophage enables us to detect at low level of concentration considering the fact that EDCs concentration is usually very low at the airborne state. Previously developed methods to detect EDCs are not available in on-the-spot detection due to the necessity of preconditioning process that requires additional time and instruments, however, this film does not require those process. In addition, we were successful to develop software that automatically assesses RGB composition of the image taken by a smart phone. If we collect the data and set the Data Base with this RGB composition of specific temperature, humidity and chemical materials, more specific and valid correlation between climate change and EDCs shall be given shape to further research.

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## Carbon pools in a West African Savanna agro forestry parkland: Case study of Dassari catchment of Northwestern Benin

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Agro-forestry parkland represents the predominant farming system in West Africa. This is due to the multiple goods and services they provide at local as well as regional to global scales. In the Sudan Savanna of West Africa, these parklands provide food, wood, and various non-timber forest products. At the regional to global scales, they contribute to both carbon sequestration and nutrient cycling. With their power for carbon sequestration and cycling, parklands play a crucial role respectively for climate change mitigation by reducing greenhouse gas emissions and sustaining soil fertility through nutrients cycling. In fact, their regular monitoring and assessment along with reproducible methodologies for this purpose are needed. This study aims to contribute to filling this gap, by measuring carbon pools in West African Sudan savanna agro-forestry parkland. In the Dassari watershed in north western Benin, we measured the below and above ground carbon pools at farmer plot levels and extrapolated them to catchment level. The results suggest that agro-forestry parklands are valuable sources for carbon sequestration and cycling and therefore important for climate change mitigation and adaptation.

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