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<b>Title:</b>	<b>Detection of Abrin by high performance Love-wave aptasensors</b>
<b>Abstract:</b>	<p>This paper exhibited experiments on Abrin detection by high performance Love-wave aptasensors.</p> <p>Love wave aptasensors can combine both the advantages of Love wave detector and aptamer. Love wave detector offers the benefits of high sensitivity, and Aptamer, one kind of artificial nucleic acid ligands, has advantages over antibodies, such as high affinity, specificity, and stability. For high quality of Aptamer immobilization on top of the Love-wave detectors, Biotin-avidin system (BAS) and Self-assembled monolayer technology (SAM), are utilized.</p> <p>First of all, a dual-channel delay-line detector is established for experimental evaluation of Love wave aptasensor. SiO<sub>2</sub> and ST-90° X Quartz are used as guild layer and substrate respectively, while the thickness of SiO<sub>2</sub> is 0.5um. The old reaction area is inserted between two groups of IDTs, and its size is 2mm*2mm. Polydimethylsiloxane (PDMS) microfluidic network is utilized to guide the liquid sample. The aptasensor works on 177.5MHz. Superior short-term frequency stability was achieved (27 Hz in hours), the detection limit is estimated for about 18.5 ng/cm<sup>2</sup>. In the sensor test experiment on BSA detection, a threshold detection limit for 20 ng/cm<sup>2</sup> was consistent with the theoretical calculation.</p> <p>Then, experiments for Abrin detection are carried out using aptamer as sensitive layer, while aptamer was immobilized on the detector by BAS and SAM. The concentration of Abrin is changed from 10ng/ml to 1ug/ml. All the experiments are operating at room temperature, and TF830 universal frequency counter is used to collect measurement datum.</p> <p>Test results show that detection for Abrin by Love wave aptasensors can work stably, and achieve good repeatability. Associating with Aptamer for Abrin detection, good sensitivity (lower than 10ng/ml) was achieved.</p>