


## [3D INGESTIBLE QR CODES/Tsinghua University]

<b>TITLE</b>	Tsinghua University scientists develop ingestible QR codes
<b>COMPANY / ORGANIZATION</b>	
<b>KEYWORDS</b>	QR, 3D, medication, counterfeit
<b>INDUSTRY AREA(S) AFFECTED</b>	<b>Pharmaceuticals</b> <b>Anti-counterfeiting</b>
<b>ISSUE ADDRESSED</b>	While many pharmaceutical packages contain printed anti-counterfeiting codes and labels, its replication or replacement remains easy for counterfeiters. Similarly, genuine packaging can be reused and filled with fake medication, making it difficult for patients to detect.
<b>SOLUTION</b>	<p>Scientists at China's Tsinghua University have developed 3D ingestible QR codes that can be applied directly to medication in tablet and capsule form. The codes are laser engraved onto polymer excipient sheets and applied to the tablet or capsule as a film-based label. Each individual tablet or capsule can then be authenticated by scanning the embedded code with a smartphone's QR-reading app.</p> <p>The labels are polymer-based and can be bonded to the surface of tablets or incorporated into capsules. Its developers have demonstrated that they have no impact on the bioavailability of several compounds including aspirin, glucose, glucuronolactone and ziprasidone hydrochloride. Additionally, it is possible to incorporate drug ingredients directly into the labels.</p> 
<b>EXPECTED BENEFITS</b>	<b>Improved consumer safety and protection against counterfeiting:</b> As typical anti-counterfeiting labels can easily be replicated or replaced, Tsinghua University's ingestible QR codes may reduce or even potentially remove the possibility of consuming fake medication. Under this solution, each tablet or capsule can be individually verified on-the-spot before consumption, significantly reducing the possibility of ingesting a potentially harmful fake.
<b>CASE LINK</b>	<p>AIPIA, <i>Ingestible QR Code for Pharma Tablets</i>  <a href="http://www.aipia.info/news-Ingestible-QR-Code-for-Pharma-Tablets-542.php">http://www.aipia.info/news-Ingestible-QR-Code-for-Pharma-Tablets-542.php</a></p> <p>Securing Industry, <i>Chinese researchers develop on-dose QR codes</i>  <a href="https://www.securindustry.com/pharmaceuticals/chinese-researchers-develop-on-dose-qr-codes/s40/a2734/#.WFHbr_krLDc">https://www.securindustry.com/pharmaceuticals/chinese-researchers-develop-on-dose-qr-codes/s40/a2734/#.WFHbr_krLDc</a></p>
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