

## Supporting Information

### **Auto-adhesive transdermal drug delivery patches using beetle inspired micropillar structures**

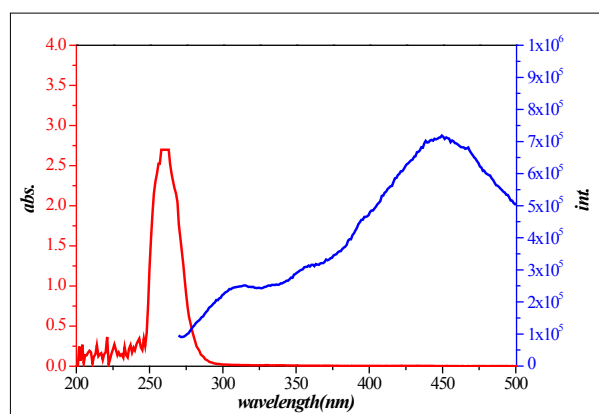
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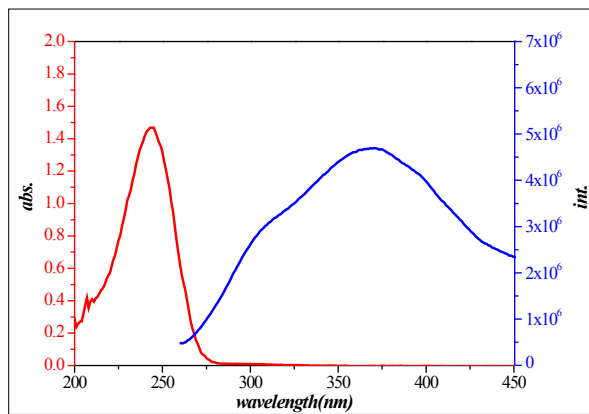
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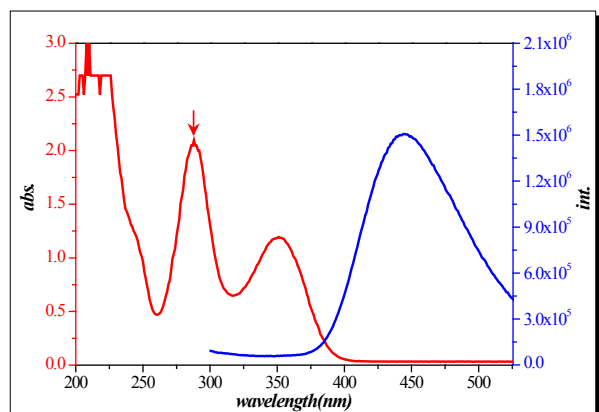
**Figure S1:** The basic absorption and emission spectra of the generic drug and ointment mixtures using in this manuscript.



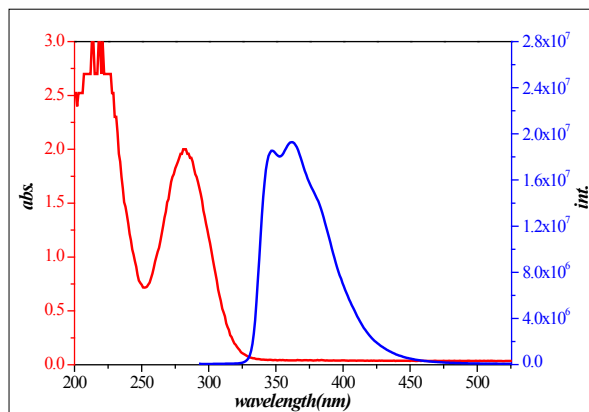
(a) Nicotine / MeOH



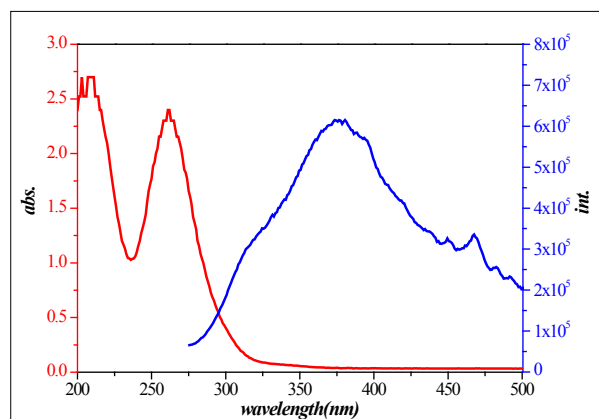
(b) Hydrocortisone/ MeOH



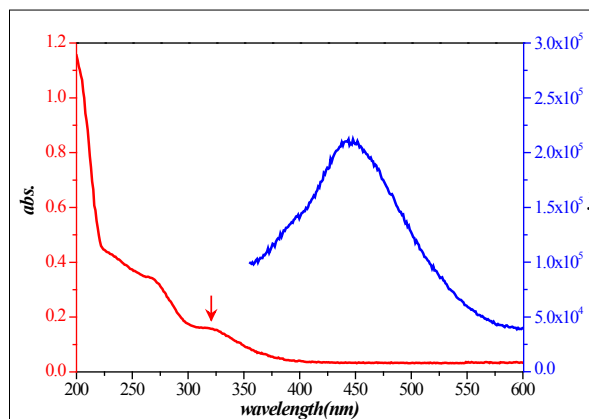
(c) Etofenamate



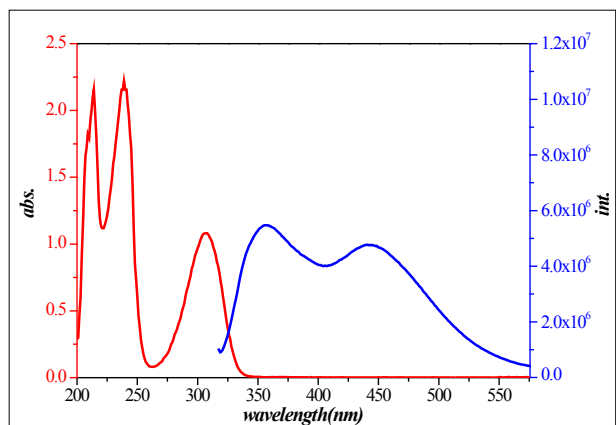
(d) Diclofenac Sodium



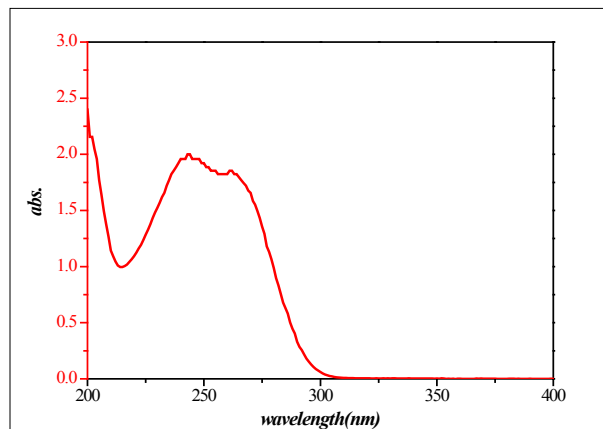
(e) Ketoprofen



(f) Indomethacin

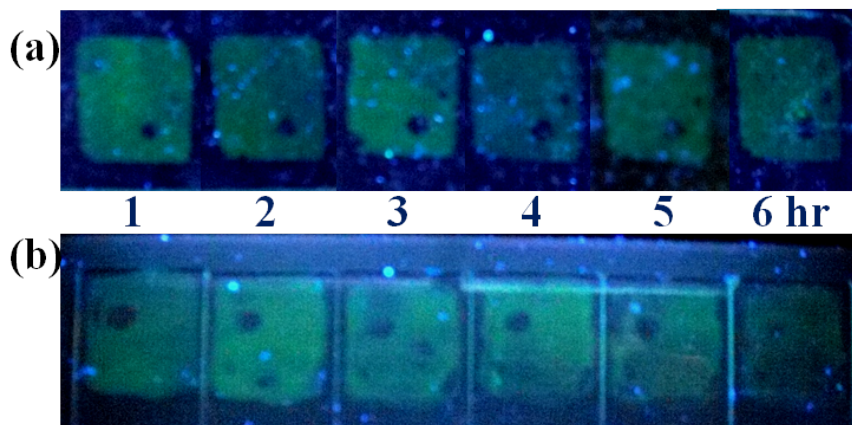


(g) Methyl Salicylate

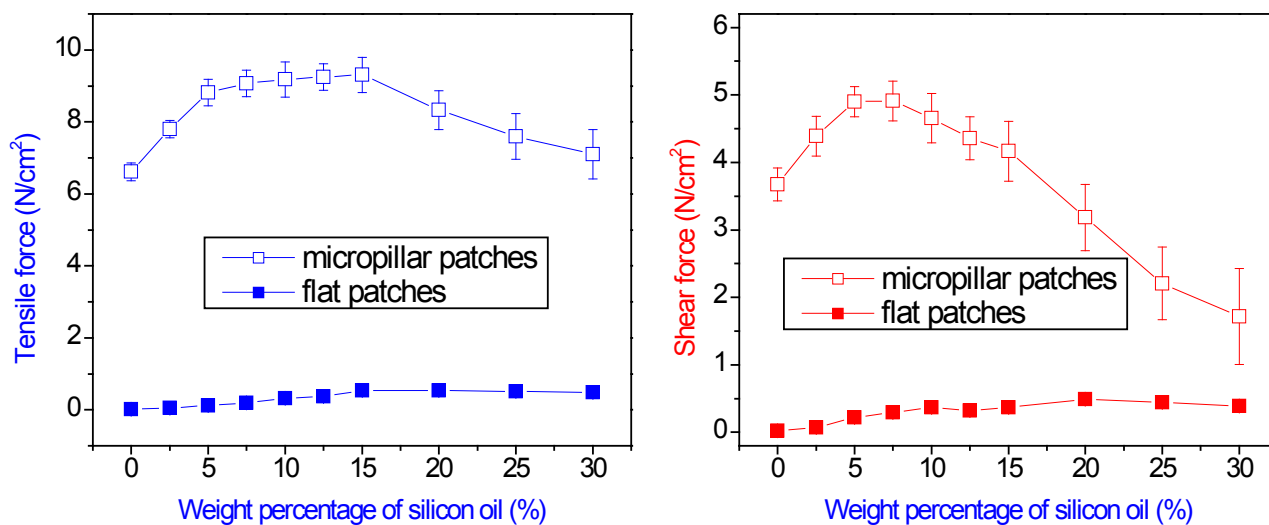


(h) Thiamine Hydrochloride /H<sub>2</sub>O

**Figure S2:** Images of the time-dependent release of preloaded silicone oil and fluorophore from (a) *Sylgard® 184* and (b) *Dow Corning® SE1740* silicone elastomer tapes. The visible emission photographs were taken under the irradiation of a handheld UV light (365 nm).



**Figure S3:** The results of a friction test on the Sylgard® 184 micropillar patch with variable weight percentages of preloaded silicone oil and compare with flat patch (non-micropillar). The tensile force (hanging bucket) is shown in blue, shear force (side hanging) is shown in red. The error bars of flat patch curve are too small to be seen even in enlarged scale.



**Figure S4:** The time dependent release percentages of the generic drugs etofenamate and diclofenac sodium that were preloaded into PDMS micro-pillar and flat (non-micropillar) patches. A patch was attached to a glass surface, which was changed once a day.

