

# Independent Lab Verifies K2 Effectiveness

Norchem Drug Testing

## Evaluation of K2/Spice Dip Strip Tests

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### Summary

Donor urine samples were tested for synthetic cannabinoids "Spice" by liquid chromatography (LC) and single dip cards. This comparison study demonstrated that field test kits may be used as an effective screening tool for detecting Spice drug abuse. The field test kits yielded no false positive results as long as samples that are border-line positive/negative are treated as negative. Samples showing a second line, however faint, must be treated as negative.

### Details of the Evaluation

To test how well the dip cards work, 37 urine samples were tested for Spice on the LC. The LC scanned for the following metabolites:

JWH-018 N-(5-hydroxypentyl) metabolite JWH-200 5-hydroxyindole metabolite  
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JWH-073 N-(4-hydroxybutyl) metabolite JWH-398 N-(5-hydroxypentyl) metabolite  
JWH-019 N-(6-hydroxyhexyl) metabolite JWH-081 N-(5-hydroxypentyl) metabolite  
JWH-250 5-hydroxyindole metabolite JWH-210 5-hydroxyindole metabolite  
JWH-250 N-(5-hydroxypentyl) metabolite JWH-210 N-(5-hydroxypentyl) metabolite  
AM2201 N-(4-hydroxypentyl) metabolite

The dip card test detects the following metabolites:

JWH-018 N-(5-hydroxypentyl) metabolite  
JWH-018 N-pentanoic acid  
JWH-073 N-(4-hydroxybutyl) metabolite  
JWH-073 N-butanoic acid

**Forensic use or export only**

*Note: The above information outlines an independent Norchem study. It does not constitute an endorsement of the product by Norchem.*

Manufactured for:



Although the dip card test detects fewer metabolites than the LC, it is an effective screening tool because the vast majority of samples positive for JWH-series drugs have either JWH-018 and/or JWH-073 metabolites present. In 2011, 98% of the positive samples tested by Norchem had JWH-018 N-(5-hydroxypentyl) metabolite or JWH-073 N-(4-hydroxybutyl) metabolites. Samples having metabolites for JWH-019 or JWH-250 alone were very rare (<2% of spice users' urine samples). Samples having JWH-200, 210, 081, 398 or AM2201 alone have not been confirmed yet and may be considered equally rare.

The information insert for the dip card tests explains that the test detects the presence of JWH-018 and JWH-073 metabolites at levels at or above 25 ng/mL. The dip card test correctly yielded positive results at levels lower than 50. The kits detected positives for levels of JWH-073 N-butanoic acid at or above 15 ng/mL. They reliably detected positives of JWH-073 N4HB at levels at or above 6 ng/mL.

The positive/negative results for 32 out of 37 urine specimens were the same for LC and dip card analysis. The dip card tests yielded 4 false negatives and 5 correct positives for samples that had low levels (< 6 ng/mL) of known JWH-series drug metabolites. Because the test doesn't always identify metabolites at levels below 6 ng/mL, that is approximately the detection limit. The dip card test also had a false negative in the rare case of a donor positive for JWH-250 but not JWH-018 or JWH-073.

The dip card tests had no false positives. However, several donors had unclear results because the second line was very weak; these urine samples were negative by LC.

### Conclusion

Dip card tests cannot detect as many Spice drugs as the LC or as low levels as the LC. However, they can detect the use of JWH-018 or JWH-073, which covers about 98% of Spice user's urine samples. The evaluation of the dip card test demonstrated that it works as advertised and is an effective screening tool for detecting spice use. Care must be taken in interpretation of the dip card result; a very weak second line is still a negative result.

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