

# IONOGEL BASED MATERIAL FOR THE COLORIMETRIC DETECTION OF $\Delta^9$ -TETRAHYDROCANNABINOL

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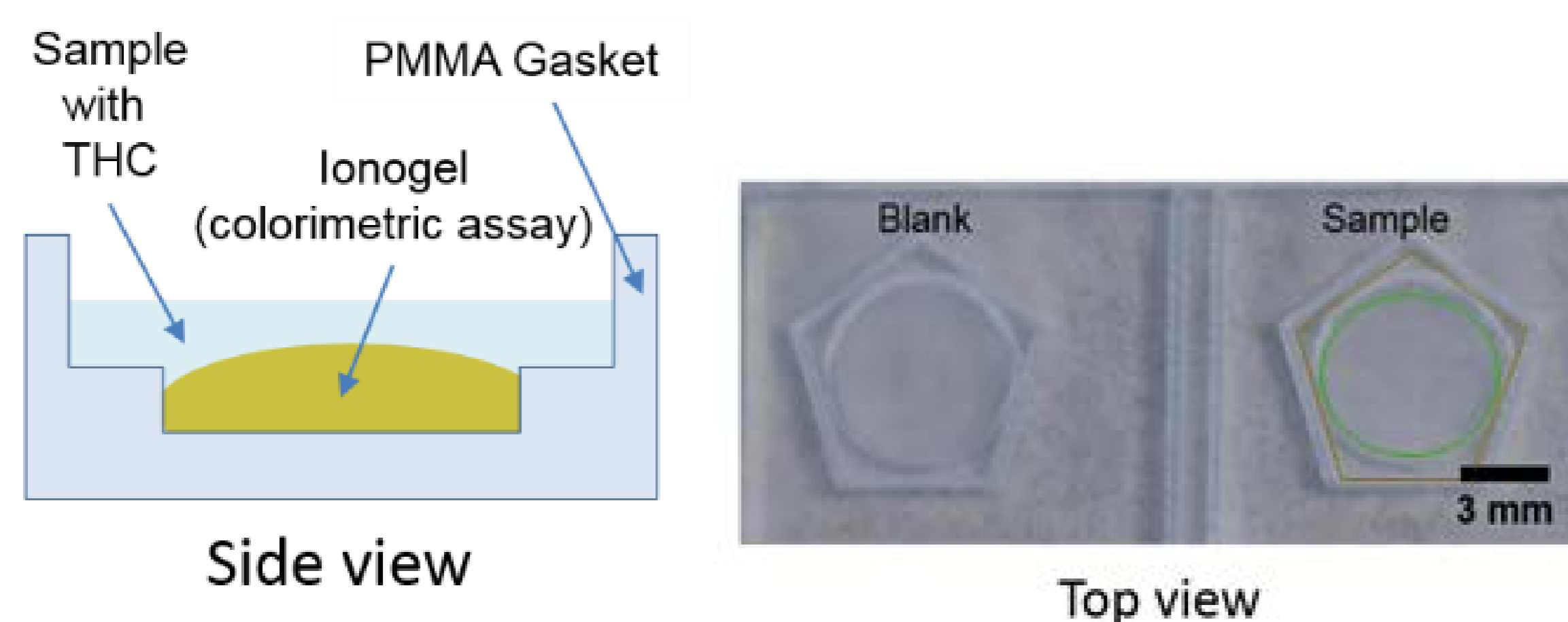
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## INTRODUCTION

*Cannabis sativa* is the most widely abused illegal drug in the world. At the same time, there is an increasing interest in the legal production of non-psychoactive hemp. This makes the easy and fast *in situ* detection of the psychoactive substance of cannabis, THC, a need[1]. Microfluidics devices and new materials [2] become an interesting approach. In this work, we report for the first time the use of an ionogel matrix for the colorimetric detection of THC through the Fast Blue B Salt method [3] as a first step in the development of a fully integrated sensor, for the identification of THC from hemp biomass and extracts.

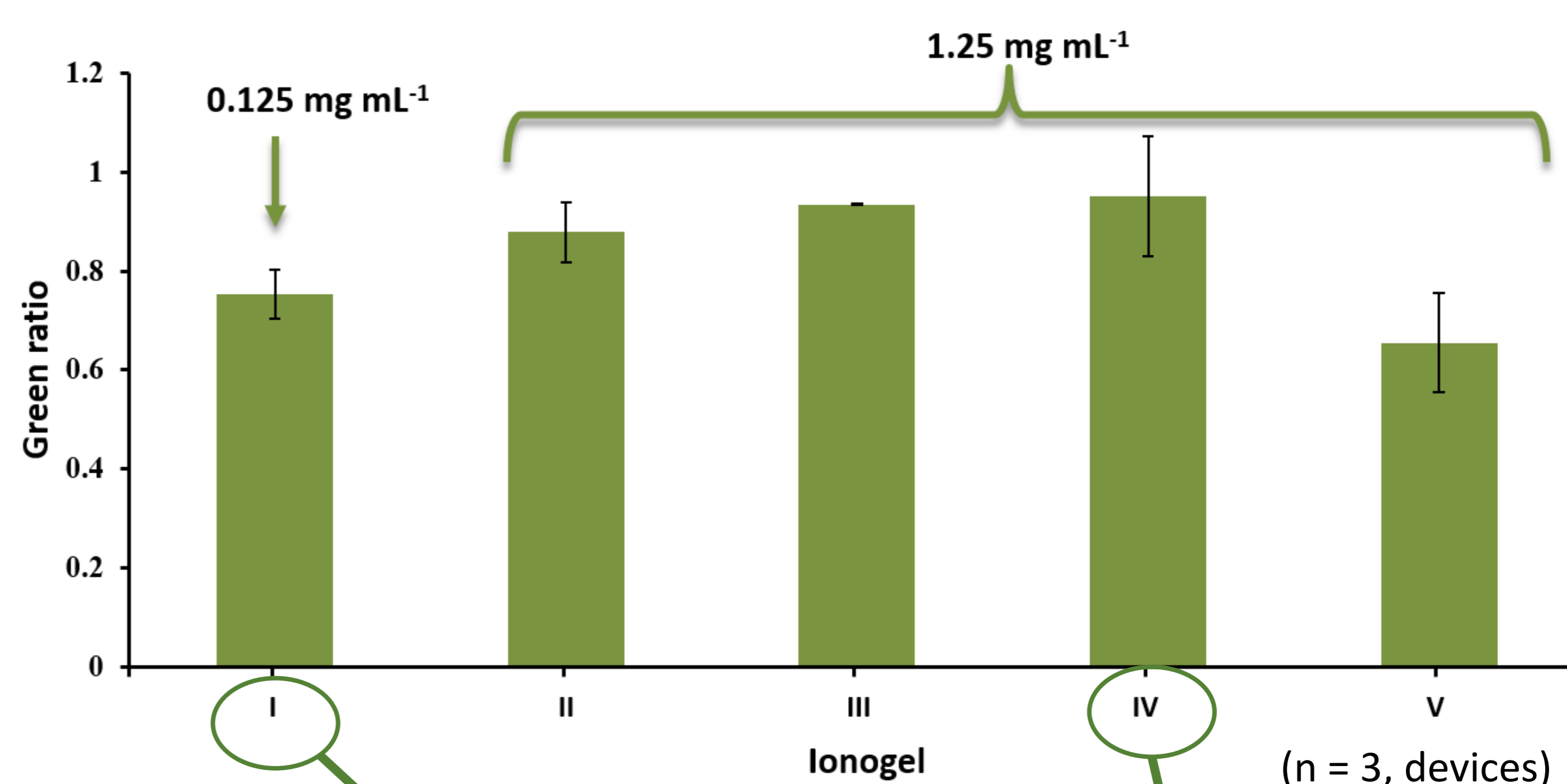
## RESULTS AND DISCUSSION

### Device and components



Green circle: ionogel and reaction reservoir  
Brown pentagon: containing wall

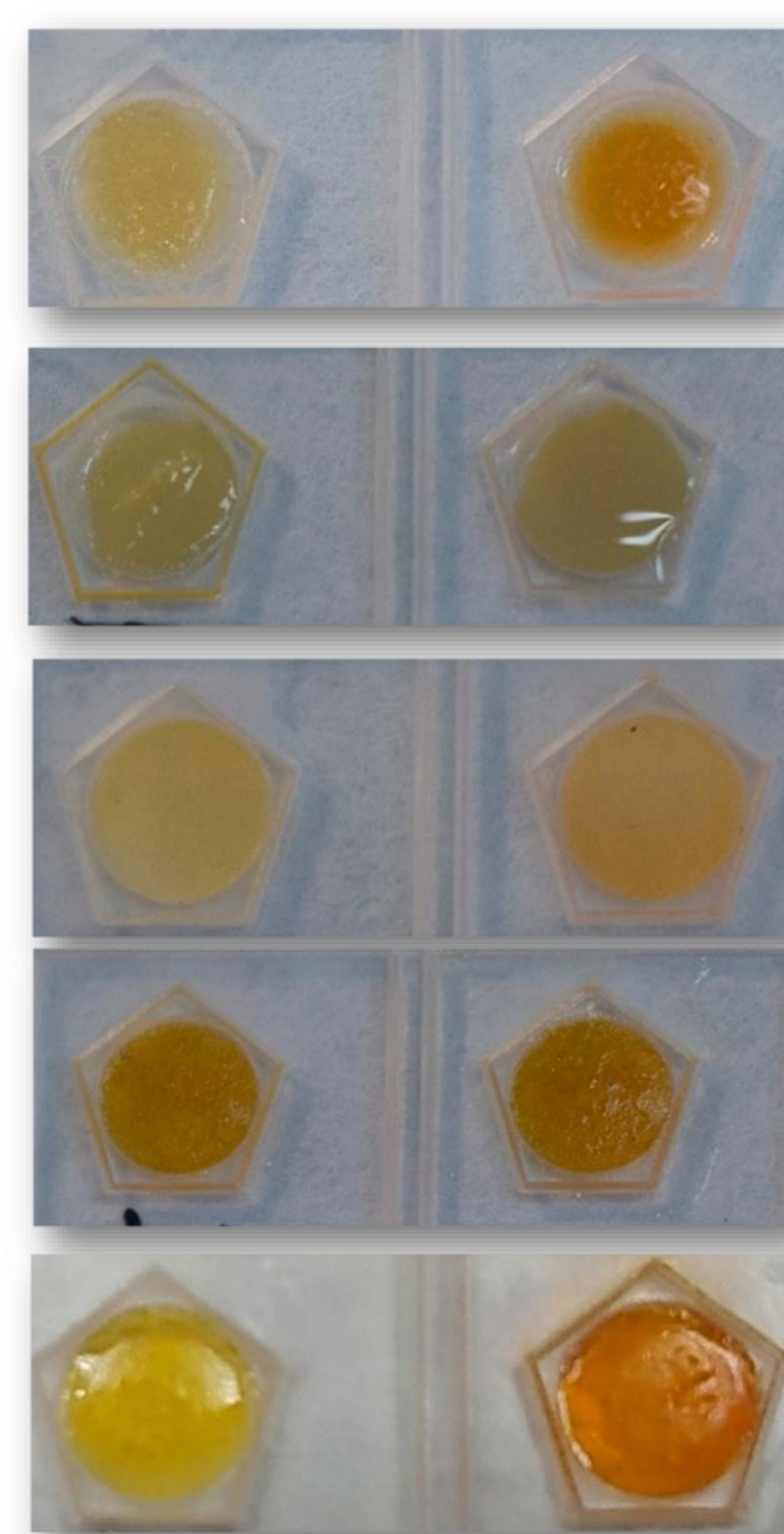
### Visual limits with different ionogels



### Ionogels tested

	Specifications	
	Ionic liquid	FBBS
IO-I	1-ethyl-3-methylimidazolium dicyanamide	NO
IO-II	Trihexyltetradecylphosphonium dicyanamide	NO
IO-III	1-ethyl-3-methylimidazolium ethyl sulfate	NO
IO-IV	1-ethyl-3-methylimidazolium dicyanamide	YES
IO-V	Trihexyltetradecylphosphonium dicyanamide	YES

FBBS + EtOH    FBBS + THC



t = 20 min

t = 72 h

Lack of color homogeneity

## CONCLUSIONS & FUTURE WORK

**Ionogels** have been proved as semi-solid matrixes for the colorimetric detection of THC

**Best results** were obtained using 1-ethyl-3-methylimidazolium dicyanamide (IO-I), 0.125 mg mL<sup>-1</sup>

**Addition of FBBS** to the monometric mixture resulted in too long reaction times

**Other cannabinoids** have to be analysed

**Ratio between THC and CBD** must be investigated to obtain a sensor for the differentiation between non-psychoactive hemp (< 0.3%) and cannabis (> 0.3%) plants.

## REFERENCES

- [1] S. Sgrò *et al.* Analytical and Bioanalytical Chemistry 413 (2021): 3399-3410. [2] G. G. *et al.* Analytica Chimica Acta 970 (2017): 1-22. [3] H.S. França *et al.* Forensic Chemistry 17 (2020): 100212.

## ACKNOWLEDGMENTS

Ministerio de Economía y Competitividad, with Grant No. BIO2016-80417-P (AEI/FEDER, UE), the Gobierno Vasco Dpto. Educación for the consolidation of the research groups (IT1271-19), European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 778001 and ABAGUNE RESEARCH.