THERAPEUTICS

New analgesic lipopeptides to treat the irritable bowel syndrome

DESCRIPTION*

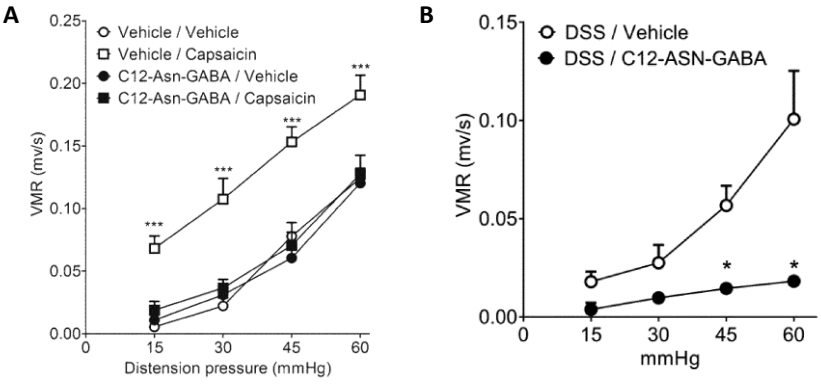
The scientists characterized a family of compounds from the probiotic *Escherichia coli* strain Nissle 1979 with pain killer properties without toxicity.

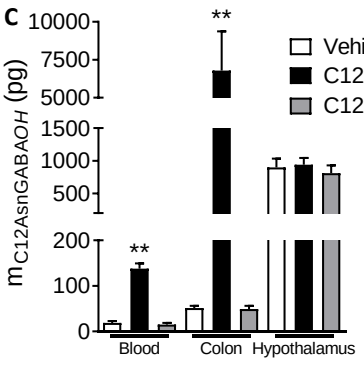
The formula of the best compound is: C12-Asn-GABA. The lipidic part acts like a carrier, allowing the GABA to cross the intestinal and colorectal epithelial barrier and target the $GABA_B$ receptors of nerves.

These compounds inhibit neuronal activities and intestinal mecanical hypersensitivity.

EXPERIMENTAL VALIDATIONS

- C12-Asn-GABA crosses the epithelial barrier (shown *in-vitro* on human cells and *ex-vivo* and *in vivo* in mouse) contrary to GABA alone.
- C12-Asn-GABA inhibits sensory neuron activation via the $GABA_B$ receptors.
- C12-Asn-GABA does not impair duodenal activity (*ex-vivo* in mouse), it has no effect on inflammation, paracellular permeability nor intestinal motricity.
- C12-Asn-GABA does not cross the blood-brain barrier: the concentration of C12-Asn-GABA does not increase in the cortex and the hypothalamus after administration of C12-Asn-GABA.





***In-vivo* in the mouse:** C12AsnGABA prevents the increase in visceromotor responses (VMR) induced by capsaicin or by colitis (Dextran sulfate sodium - DSS). Thirty minutes (black bar) but not 4 hours (gray bar) after its intracolonic administration, C12AsnGABA concentration was increased in blood and colon but not in hypothalamus.

COMPETITIVE ADVANTAGES

- Reduction of visceral pain
- No crossing of the blood-brain barrier
- Oral administration
- Optimizable family of compounds

APPLICATIONS

- Visceral pain and specifically in the irritable bowel syndrome

INTELLECTUAL PROPERTY

- European patent application N°17305481.8 filed in April 2017
- International extension in the US and in Europe

DEVELOPMENT STAGE

- Experimental proof of concept

NEXT

- Looking for an industrial partner to co-invest in the *in-vivo* proof-of-concept, the chemical optimization, PK/PD and toxicity studies

LABORATORY

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