



HAL
open science

Effets of ovarian hormones on intestinal mast cell reactivity to substance P and compound 48/80 in rats

Sylvie Bradesi, Hélène Eutamène, Vassilia Theodorou, Rafael Garcia Villar, Jean Fioramonti, Lionel Bueno

► **To cite this version:**

Sylvie Bradesi, Hélène Eutamène, Vassilia Theodorou, Rafael Garcia Villar, Jean Fioramonti, et al.. Effets of ovarian hormones on intestinal mast cell reactivity to substance P and compound 48/80 in rats. 17. International Symposium on Gastrointestinal Motility, Sep 1999, Bruges, Belgium. 1999, Neurogastroenterol Mot 11 (4). hal-01600689

HAL Id: hal-01600689

<https://hal.science/hal-01600689>

Submitted on 4 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

NEUROGASTROENTEROLOGY AND MOTILITY

Volume 11 Number 4 August 1999

ABSTRACTS

247 Abstracts of papers accepted for presentation at the 17th International Symposium on Gastrointestinal Motility, 14-17 September 1999, Bruges, Belgium

Indexed by Index Medicus and MEDLINE

Information on this journal can be accessed at: <http://www.blackwell-science.com/nmo>

contraction amplitude in group A was due to a very low values (~ -10%) obtained in two pts, which indicate a lack of responsiveness to S.
CONCLUSION. Sildenafil, a specific inhibitor of corpus cavernosum PD-5, acts also on esophageal smooth muscle of patients with achalasia, markedly decreasing LES pressure and contraction amplitude with the exception of 2 out of 7 cases.

EFFECT OF OVARIAN HORMONES ON INTESTINAL MAST CELL REACTIVITY TO SUBSTANCE P AND COMPOUND 48/80 IN RATS.
 S Bradesi, H Eutamene*, V Theodorou, R Garcia-Villar, J Fioramonti, L Buéno. INRA Neuro-Gastroenterology & Nutrition Unit, Toulouse; *IRJ/PARKE-DAVIS, Fresnes, France.

Ileal hypermastocytosis has been described in IBS patients. Recently we showed a constitutive difference between male and female rats in mucosal mast cell (MMC) numbers and amount of histamine released after substance P (SP) stimulation *in vitro*. Therefore, the hormonal environment may play an important role in mast cell regulated events.
AIM: The aim of our study was to evaluate the influence of progesterone (P) in female rats on *in vitro* histamine released by jejunal and colonic MMC degranulated by SP or by a nonspecific mast cell degranulator (compound 48/80).
METHODS: 3 groups of 8 female Wistar rats (200-250 g) were used. Under anaesthesia, rats in groups 1 and 2 were ovariectomized (OVX). Those of the 3rd group were sham operated (sham OVX). A daily treatment of P (10 mg/kg s.c.) was performed for 6 days in the first group (OVX + P). At the end of P treatment, rats were exsanguinated. Segments of jejunum and proximal colon were collected from each animal for evaluation of both MMC numbers after Alcian blue-safranin staining and potency to release histamine after SP (1.3 mg/ml) and compound 48/80 (1.5 mg/ml) stimulation *in vitro*.
RESULTS: There was no difference in jejunal and colonic MMC numbers between the 3 groups. Histamine release at jejunal and colonic levels after compound 48/80 *in vitro* stimulation was similar in the 3 groups. In contrast, histamine release elicited by SP from jejunal strips was reduced ($p < 0.05$) in OVX compared with sham OVX rats, and restored in OVX rats treated with P. In the colon, OVX resulted in a significant increase in histamine release after SP stimulation and treatment with P did not restore a normal histamine release.
CONCLUSION: Ovarian steroid hormones do not affect mast cell numbers in both jejunum and colon of female rats. However, the reproductive hormonal status differently influences jejunal and colonic MMC sensitivity to SP but not to compound 48/80.

DESCENDING EXCITATORY PATHWAYS TO THE CIRCULAR MUSCLE OF THE GUINEA-PIG ILEUM.

SJH Brookes, M Costa and CM Humphreys. Dept of Physiology, Centre for Neuroscience, Flinders University, South Australia 5042.

Ascending excitatory and descending inhibitory pathways to the circular muscle of the intestine have been widely studied over many years, however several studies have also reported descending excitation, evoked by stretch. We aimed to determine requirements for the occurrence of descending excitation and its role in peristaltic propagation. Two microprocessor-controlled stepper-motors, with in-series force transducers were used to deliver controlled stretches to isolated flat sheets of guinea pig ileum while recording their circumferential tension responses (Brookes et al 1999). Rapid circumferential stretch orally (5mm/s) evoked, above a threshold length, a large, neurogenic contraction with a latency ranging from 0.15s for a supramaximal stretch, to 8.25s for a just-suprathreshold stimulus (mean = 1.84 ± 0.20 s, n=6). Recordings 12mm aboral to the stretched region, revealed descending excitatory contractions occurring 0.16 - 7.26s after the onset of stretch, but only when a contraction occurred orally. Descending excitatory contractions followed oral contractions with a mean latency of 0.42 ± 0.18 s, corresponding to a propagation velocity of 28.6mm/s. We then stretched 50mm long, flat-sheet preparations slowly (100µm/s) to mimic fluid distension and recorded contractions at six points along their length. Contractions started first at the oral end and propagated aborally without decrement for at least 30mm but declined significantly in the last 10mm of the preparation. This demonstrated that peristaltic contractions do not require propulsion of fluid, or shortening of the muscle to propagate aborally and suggest that descending excitation plays a significant role in this coordinated propulsive motor activity. The failure of propagating contractions to invade the aboral end of preparations suggests, (somewhat surprisingly) an involvement of ascending excitatory pathways in aboral propagation. However, descending excitation is not a simple reflex response to stretch; it is an integrated component of the peristaltic motor pattern which is triggered abruptly, with a sharp threshold.
 Brookes, SJH, Chen BN, Costa M and Humphreys CMS (1999). Initiation of peristalsis by circumferential stretch in flat sheets of guinea pig ileum. *J Physiol* 516.2:525-538.



Abstract Form

Abstracts must be received by April 1, 1999
(Electronic submission: see website)

EFFECT OF OVARIAN HORMONES ON INTESTINAL MAST CELL REACTIVITY TO SUBSTANCE P AND COMPOUND 48/80 IN RATS
S Bradesi, H Eutamene*, V Theodorou, R Garcia-Villar, J Fioramonti, L Buéno. INRA Neuro-Gastroenterology & Nutrition Unit, Toulouse; *IRJ/PARKE-DAVIS, Fresnes, France.

Ileal hypermastocytosis has been described in IBS patients. Recently we showed a constitutive difference between male and female rats in mucosal mast cell (MMC) numbers and amount of histamine released after substance P (SP) stimulation *in vitro*. Therefore, the hormonal environment may play an important role in mast cell regulated events.

AIM: The aim of our study was to evaluate the influence of progesterone (P) in female rats on *in vitro* histamine released by jejunal and colonic MMC degranulated by SP or by a nonspecific mast cell degranulator (compound 48/80).

METHODS: 3 groups of 8 female Wistar rats (200-250 g) were used. Under anaesthesia, rats in groups 1 and 2 were ovariectomized (OVX). Those of the 3rd group were sham operated (sham OVX). A daily treatment of P (10 mg/kg s.c.) was performed for 6 days in the first group (OVX + P). At the end of P treatment, rats were exsanguinated. Segments of jejunum and proximal colon were collected from each animal for evaluation of both MMC numbers after Alcian blue-safranin staining and potency to release histamine after SP (1.3 mg/ml) and compound 48/80 (1.5 mg/ml) stimulation *in vitro*.

RESULTS: There was no difference in jejunal and colonic MMC numbers between the 3 groups. Histamine release at jejunal and colonic levels after compound 48/80 *in vitro* stimulation was similar in the 3 groups. In contrast, histamine release elicited by SP from jejunal strips was reduced ($p < 0.05$) in OVX compared with sham OVX rats, and restored in OVX rats treated with P. In the colon, OVX resulted in a significant increase in histamine release after SP stimulation and treatment with P did not restore a normal histamine release.

CONCLUSION: Ovarian steroid hormones do not affect mast cell numbers in both jejunum and colon of female rats. However, the reproductive hormonal status differently influences jejunal and colonic MMC sensitivity to SP but not to compound 48/80.

(For office use)

The corresponding author affirms: 1) that the material herein will not have been published as an article or presented at a major international meeting by June 1, 1999; 2) that if human subjects were exposed to risks not required by their medical needs, the study was approved by an appropriate committee or that "The Belmont Report; Ethical Principles and Guidelines for the Protection of Human Subjects of Research" were followed; 3) that any animal studies conform with the "Guiding Principle in the Care and Use of Animals" of the American Physiological Society.

Signature of Corresponding Author

For Young Investigator Award

Signature of Candidate

Name of Sponsor

Signature of Sponsor

Category (check one box only)

- Smooth Muscle/ ICC
- Enteric Nervous System
- Brain-Gut Axis
- Esophageal Motility
- Gastric Motility
- Small Intestinal Motility
- Colonic Motility
- Biliary Motility
- Reflux Disease
- Gastroparesis, Dyspepsia
- IBS
- Constipation
- Neuro-immune interactions

Additional keywords:
.....
.....

Poster Presentation Only

Author for correspondence (if an award is applied for, this must be the candidate)

Name _____ Initials _____

Institute _____

Address _____

Postal Code _____ City _____

Phone _____ Fax _____

E-mail _____