World Journal of Gastroenterology

Online Submissions: http://www.wjgnet.com/esps/
wjg@wjgnet.com
doi:10.3748/wjg.v18.i31.4241

World J Gastroenterol 2012 August 21; 18(31): 4241-4242
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

Non-steroidal anti-inflammatory drugs-induced small intestinal injury and probiotic agents

Mario Guslandi

Mario Guslandi, Gastroenterology Unit, S. Raffaele University Hospital, 20132 Milan, Italy
Author contributions: Guslandi M contributed solely to this work.
Correspondence to: Mario Guslandi, Professor, Gastroenterology Unit, S. Raffaele Hospital, Via Olgettina 60, 20132 Milano, Italy. guslandi.mario@hsr.it
Telephone: +39-2-26431 Fax: +39-2-26433491
Received: December 2, 2011 Revised: March 8, 2012
Accepted: April 21, 2012
Published online: August 21, 2012

Abstract

Intestinal bacteria play a role in the development of non-steroidal anti-inflammatory drugs (NSAID)-induced small intestinal injury. Agents such as probiotics, able to modify the gut ecology, might theoretically be useful in preventing small intestinal damage induced by NSAIDs. The clinical studies available so far do suggest that some probiotic agents can be effective in this respect.

Key words: Non-steroidal anti-inflammatory drugs; Small intestine; Intestinal bacteria; Probiotics

Peer reviewers: Marcela Kopacova, Professor, MD, PhD, 2nd Department of Internal Medicine, Charles University in Praha, Faculty of Medicine at Hradec Král, Sokolska 581, Hradec Kralove 50005, Czech; Shardul S Wagh, University Department of Biochemistry, RTM Nagpur University, L.I.T. Premises, Amravati Road, Nagpur 440033, India; Nageshwar Duvvuru Reddy, Professor, Gastroenterology, Asian Institute of Gastroenterology, A-27, Journalist Colony, Jubilee Hillshyderabad, Hyderabad 500033, India

Guslandi M. Non-steroidal anti-inflammatory drugs-induced small intestinal injury and probiotic agents. *World J Gastroenterol* 2012; 18(31): 4241-4242 Available from: URL: http://www.wjgnet.com/1007-9327/full/v18/i31/4241.htm DOI: http://dx.doi.org/10.3748/wjg.v18.i31.4241

TO THE EDITOR

Park *et al*[1,2] in their interesting editorial[1] about small intestinal injury induced by non-steroidal anti-inflammatory drugs (NSAIDs), discussed the possible role of the intestinal flora in the pathogenesis of the enteric damage, but, oddly enough, when listing the pharmacological agents theoretically useful as protective or therapeutic medicines, they omitted to mention probiotics. Live micro-organisms could prevent NSAID-induced small intestinal damage by both modifying intestinal microbial ecology and modulating the local immune function.

Various studies have addressed the issue. While a pilot study in human volunteers failed to demonstrate any effect of *Lactobacillus GG* in preventing indomethacin-induced alterations of intestinal permeability[3], a subsequent experimental study demonstrated that in rats pretreated with *Lactobacillus casei*, strain Shirota significantly prevents the development of indomethacin-induced enteropathy[4], although the mechanism responsible for this phenomenon remains not completely clear.

In a recent trial, patients treated for three months with low-dose enteric-coated aspirin (100 mg daily) were randomized to receive either co-administration of *Lactobacillus casei* or no additional treatment[5]. Capsule endoscopy, performed before and after treatment, showed a significant decrease ($P = 0.039$) in the number of mucosal breaks and in the endoscopic score in the probiotic group as compared with controls.

In a randomized, double-blind, cross-over placebo-controlled study in healthy volunteers, the probiotic mixture VSL # 3 was found to prevent the increase in faecal concentration of the inflammatory marker calprotectin during intake of indomethacin 50 mg daily[6].

The role of bacteria in the development of small intestinal lesions during NSAID administration seems indirectly confirmed, but the recent experimental observations showed that proton pump inhibitors significantly worsen intestinal ulcerations and bleeding in naproxen- and celecoxib-treated rats and this is related to substantial

shifts in enteric microbial population (e.g., a marked reduction in *Actinobacteria* and *Bifidobacteria*)[7].

All in all, it appears that probiotics can represent promising agents in the prevention of NSAID-induced small intestine injury, although additional studies are needed to better clarify this point. However, the efficacy of any single probiotic strain should be evaluated separately, due to the differences in the biological effects and mode of actions of the various agents currently available.

REFERENCES

1 **Park SC**, Chun HJ, Kang CD, Sul D. Prevention and management of non-steroidal anti-inflammatory drugs-induced small intestinal injury. *World J Gastroenterol* 2011; **17**: 4647-4653

2 **Scarpignato C**. NSAID-induced intestinal damage: are luminal bacteria the therapeutic target? *Gut* 2008; **57**: 145-148

3 **Gotteland M**, Cruchet S, Verbeke S. Effect of Lactobacillus ingestion on the gastrointestinal mucosal barrier alterations induced by indometacin in humans. *Aliment Pharmacol Ther* 2001; **15**: 11-17

4 **Watanabe T**, Nishio H, Tanigawa T, Yamagami H, Okazaki H, Watanabe K, Tominaga K, Fujiwara Y, Oshitani N, Asahara T, Nomoto K, Higuchi K, Takeuchi K, Arakawa T. Probiotic Lactobacillus casei strain Shirota prevents indomethacin-induced small intestinal injury: involvement of lactic acid. *Am J Physiol Gastrointest Liver Physiol* 2009; **297**: G506-G513

5 **Endo H**, Higurashi T, Hosono K, Sakai E, Sekino Y, Iida H, Sakamoto Y, Koide T, Takahashi H, Yoneda M, Tokoro C, Inamori M, Abe Y, Nakajima A. Efficacy of Lactobacillus casei treatment on small bowel injury in chronic low-dose aspirin users: a pilot randomized controlled study. *J Gastroenterol* 2011; **46**: 894-905

6 **Montalto M**, Gallo A, Curigliano V, D'Onofrio F, Santoro L, Covino M, Dalvai S, Gasbarrini A, Gasbarrini G. Clinical trial: the effects of a probiotic mixture on non-steroidal anti-inflammatory drug enteropathy - a randomized, double-blind, cross-over, placebo-controlled study. *Aliment Pharmacol Ther* 2010; **32**: 209-214

7 **Wallace JL**, Syer S, Denou E, de Palma G, Vong L, McKnight W, Jury J, Bolla M, Bercik P, Collins SM, Verdu E, Ongini E. Proton pump inhibitors exacerbate NSAID-induced small intestinal injury by inducing dysbiosis. *Gastroenterology* 2011; **141**: 1314-1322

S- Editor Gou SX **L- Editor** Ma JY **E- Editor** Zhang DN