Milk diets influence doxorubicin-induced intestinal toxicity in piglets - DTU Orbit
(15/12/2018)

**Milk diets influence doxorubicin-induced intestinal toxicity in piglets**

Chemotherapy-induced gastrointestinal (GI) toxicity is a common adverse effect of cancer treatment. We used preweaned piglets as models to test our hypothesis that the immunomodulatory and GI trophic effects of bovine colostrum would reduce the severity of GI complications associated with doxorubicin (DOX) treatment. Five-day-old pigs were administered DOX (1 × 100 mg/m^2) or an equivalent volume of saline (SAL) and either fed formula (DOX-Form, n = 9, or SAL-Form, n = 7) or bovine colostrum (DOX-Colos, n = 9, or SAL-Colos, n = 7). Pigs were euthanized 5 days after initiation of chemotherapy to assess markers of small intestinal function and inflammation. All DOX-treated animals developed diarrhea, growth deficits, and leukopenia. However, the intestines of DOX-Colos pigs had lower intestinal permeability, longer intestinal villi with higher activities of brush border enzymes, and lower tissue IL-8 levels compared with DOX-Form (all P <0.05). DOX-Form pigs, but not DOX-Colos pigs, had significantly higher plasma C-reactive protein, compared with SAL-Form. Plasma citrulline was not affected by DOX treatment or diet. Thus a single dose of DOX induces intestinal toxicity in preweaned pigs and may lead to a systemic inflammatory response. The toxicity is affected by type of enteral nutrition with more pronounced GI toxicity when formula is fed compared with bovine colostrum. The results indicate that bovine colostrum may be a beneficial supplementary diet for children subjected to chemotherapy and subsequent intestinal toxicity.

**General information**

State: Published
Organisations: National Veterinary Institute, Section for Immunology and Vaccinology, University of Copenhagen, Odense University Hospital, University of Memphis, Copenhagen University Hospital
Pages: G324-G333
Publication date: 2016
Peer-reviewed: Yes

**Publication information**

Journal: American Journal of Physiology: Gastrointestinal and Liver Physiology
Volume: 311
Issue number: 2
ISSN (Print): 0193-1857
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.24 SJR 1.822 SNIP 0.918
Web of Science (2017): Impact factor 3.293
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.62 SJR 1.877 SNIP 1.037
Web of Science (2016): Impact factor 3.468
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.59 SJR 1.981 SNIP 1.005
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 4.06 SJR 2.189 SNIP 1.181
Web of Science (2014): Impact factor 3.798
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 4.14 SJR 2.202 SNIP 1.228
Web of Science (2013): Impact factor 3.737
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.85 SJR 1.704 SNIP 1.157