

## Executive Summary

# Chemo-preventive Potential of Camel Milk Against Colon Cancer

Amira M. Amr 

*Department of Public Health Nutrition, Al-Quds University, Jerusalem, Palestine*

### Keywords:

Dietary chemoprevention, camel milk, colon cancer, aberrant crypt foci, azoxymethane, chemopreventive and screening techniques, ACF counts, paraneoplastic lesions, carcinogenesis, molecular mechanisms, mutagenic chemical compounds, *Lactobacillus acidophilus*, *Streptococcus thermophilus*, Pro-biotic strains

### Citation:

Amira M. Amr, 2019. Chemo-preventive Potential of Camel Milk Against Colon Cancer. Asian Journal of Emerging Research, 1(1): 30-32.

### Corresponding Author:

Amira M. Amr, Department of Public Health Nutrition, Al-Quds University, Jerusalem, Palestine

### Copyright:

2019 Amira M. Amr. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

**Competing Interest:** The authors have declared that no competing interest exists.

**Data Availability:** All relevant data are within the paper and its supporting information files.

### Article History:

Received: January 17, 2019 | Accepted: April 15, 2019

Colorectal cancer is a major cause of morbidity and mortality worldwide and it accounts for over 9% of all cancer cases and represents the third most common cancer worldwide. Epidemiological evidence has shown that the majority of CRC cases of the sporadic type could be prevented by application of cancer chemoprevention and screening techniques<sup>1</sup>.

Dietary factors are responsible for 70-90% of CRC cases and diet optimization can prevent most of these cases<sup>2</sup>. Most epidemiological and experimental studies conducted to determine the effects of milk and dairy product consumption on neo-plastic development have focused on bovine milk<sup>3</sup>, whereas information on camel milk and other types of milk were limited.

Camel milk is an important functional food with the potential to provide health benefits for the treatment of different ailments<sup>4</sup>. These potential health benefits are attributed to the presence of bioactive compounds<sup>5</sup>. However, other functional components could be derived from camel milk proteins via fermentation using pro-biotic strains. Thus, camel milk is used in alternative medical practices to treat many diseases, including cancer<sup>6</sup>.

In this context a new study was carried out to investigate the chemo-preventive potential of camel and bovine milk as well as the impact of fermenting these milks with two bacterial strains i.e. *Lactobacillus acidophilus* and *Streptococcus thermophilus* against early colon carcinogenesis<sup>7</sup>.

The chemo-preventive effect of fermented dairy products that contain live lactic acid bacteria along with their metabolites, have been shown to modulate the immune response in animals, suppress carcinogenesis in rodents, inhibit the activity of enzymes related to carcinogenesis and bind carcinogenic and mutagenic chemical compounds<sup>8</sup>.

The results of current study showed that pasteurized camel and bovine milk exhibit chemo-preventive potential against paraneoplastic lesions as expressed by the Aberrant Crypt Foci ACF counts in the early stages of colon carcinogenesis. Moreover, fermenting both types of milk did not significantly improve the chemo-preventive potential. The current study failed to elucidate the molecular mechanisms underlying the chemo-preventive potential of the tested milk at the early stages of carcinogenesis.

Further investigations of the chemo-preventive ability of camel milk against later stages of carcinogenesis may clarify the chemo-preventive effects of milk, although a study period of more than 30 weeks will be required.

## REFERENCES

1. Schoen, R.E., P.F. Pinsky, J.L. Weissfeld, L.A. Yokochi and T. Church *et al.*, 2012. Colorectal-cancer incidence and mortality with screening flexible sigmoidoscopy. *New Engl. J. Med.*, 366: 2345-2357.
2. De Angelis, R.C., I.C.M. Terra and J.V.M. Campos, 1988. The effect of maturation and source of dietary protein on the capacity of the small intestine to hydrolyze lactose in rats. *Nutr. Res.*, 8: 1413-1420.
3. Gill, H.S. and M. Cross, 2000. Anticancer properties of bovine milk. *Br. J. Nutr.*, 84: 161-164.
4. Al Haj, O.A. and H.A. Al Kanhal, 2010. Compositional, technological and nutritional aspects of dromedary camel milk. *Int. Dairy J.*, 20: 811-821.
5. Khedid, K., M. Faid, A. Mokhtari, A. Soulaymani and A. Zinedine, 2009. Characterization of lactic acid bacteria isolated from the one humped camel milk produced in Morocco. *Microbiol. Res.*, 164: 81-91.
6. Salwa, M.Q. and A.F.K. Lina, 2010. Antigenotoxic and anticytotoxic effect of camel milk in mice treated with cisplatin. *Saudi J. Biol. Sci.*, 17: 159-166.

7. Amr, A.M., H.R. Takruri, M.S. Shomaf, O.A. Alhaj, M.A.E. Faris and W.M. Abdel-Rahman, 2018. Fermented camel (*Camelus dromedarius*) and bovine milk attenuate azoxymethane-induced colonic aberrant crypt foci in fischer 344 rats. *Pak. J. Nutr.*, 17: 179-189.
8. Perdigon, G., A.M. de LeBlanc, J. Valdez and M. Rachid, 2002. Role of yoghurt in the prevention of colon cancer. *Eur. J. Clin. Nutr.*, 56: S65-S68