

Camel Milk and its Unique Anti-Diarrheal Properties

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In the past few years there has been an upsurge of global interest in the healing effects of camel milk following the Internet posting by the Food and Agriculture Organization of the United Nations that human consumption of camel milk could generate a billion dollars of income [1]. The healing properties of camel milk were first mentioned in the “Words of The Prophet Mohamed” in the *Surah*, a section of the Koran (Volume 7, Book 71, number 590) [2].

Due to the demand for pasteurization, which negates most of the benefits of camel milk, there is a dearth of clinical trials on the healing effects of camel milk. The few animal studies that have been published provide evidence on its therapeutic activity. This is demonstrated in the article in the present issue of *IMAJ* on the action of camel milk in mice inoculated with *Salmonella enterica* [3].

Among the “protective proteins” in camel milk are lysozyme, lactoferrin, lactoperoxidase, and peptidoglycan recognition protein [4,5]. These properties have anti-diarrheal/antibacterial action as well as high titers of antibodies against rotavirus, and they impact on the immune system. Only human and camel milk have physiologically high concentrations of the enzyme NaGase (N-acetyl-B-glucosaminidase) [6] which in milch cows is an indication of mastitis.

Camel immunoglobulins are a tenth the size of human ones and are highly potent [7]. These properties have been put to use by the Homeland Security Department of the United States government to create biosensors for determining which agent is being used in a biological warfare attack [8].

For hundreds of years camel milk has been used to treat diarrhea even though the identity of the active substance in the milk was not known. The present article offers a new look at two gastrointestinal diseases, with accompanying immunological involvement, that have reached epidemic proportions and which respond to camel milk.

AUTISM SYNDROME

Autism is an autoimmune disease [9] that, surprisingly, attacks the intestines, not the brain [10]. Reactions in the intestines are diarrhea, “leaky gut” syndrome, and the effect on appetite (“picky eater”). The most prominent cerebral symptoms are caused by a malfunction in the formation of amino acids from two caseins in cow milk, beta-casein and beta-lactoglobulin. Instead, a powerful opioid, casomorphine, is formed [11]. This opioid elicits the cerebral symptoms of the autism syndrome. This hypothesis is supported by evidence showing that when dairy products are removed from the diet the “cerebral” symptoms dissipate [12]. This theory emerged when it was found that people with autistic syndrome suffering from diarrhea had normal bowel movements when treated with camel milk as well as improved cerebral symptoms [10]. Camel milk does not contain the two caseins that form casomorphine from cow

milk, so symptoms do not develop, while the active immune system in the camel milk helps ameliorate the autoimmune problems. Animal studies (in laboratory rats) confirmed the above hypothesis when injections of casomorphine caused autism-like symptoms [13]. Therefore, it is probable that the autism syndrome is primarily an autoimmune disease that affects the intestines. Brain damage is secondary at an older age.

CROHN’S DISEASE

It is commonly accepted that Crohn’s disease is an autoimmune disease. However, there are numerous data suggesting that a bovine disorder, Johne’s disease, is associated with Crohn’s disease via a bacterium, *Mycobacterium avium* paratuberculosis. MAP is absorbable by humans because it is not destroyed by pasteurization [14]. This theory was previously discarded but increasing data are prompting a second look.

It is hypothesized that after MAP enters the intestinal tissues it remains there as a saprophyte, becoming active only in the presence of severe emotional stress [15]. Antibodies are then formed to counteract the infection, but as they are too large to penetrate the intestinal tissues they bombard them from the outside, leading to an autoimmune situation. It is therefore theorized that Crohn’s disease is primarily a bacterial infection and secondarily an autoimmune disease.

That MAP plays a role in Crohn’s disease was given credence when it was found that lactating women in Canada suffering from Crohn’s disease secrete

MAP = *Mycobacterium avium* paratuberculosis

MAP in their milk [16]. It is also pertinent that in Holland it was estimated that up to 50% of the milk industry is infected by MAP [17]. Although no clinical trials were carried out to confirm this hypothesis the following posting on the Internet is pertinent [18]:

I had the unique and strange privilege to visit Punjab in India. Upon entry to their clinic in Faridkot, the most terrible sights burst on my eyes – tens of scores of children, deformed, cripple, autistic-syndrome kids, others with sensory losses (blind or deaf), and all suffering from the most terrible diarrhea!

Camel milk was obtained for the clinic. I chatted with Dr. Pritpal and he says that all the children on the camel's milk are doing really well! The camel's milk is healing allergic gastritis and a plethora of immunity related issues. The autistic children especially are doing so well and the children with the 20+ bouts of diarrhea per day are cured with normal bowel movements!

It should be noted that rotavirus is the most common cause of diarrhea in children under 5 years old [19]. Since camel milk is rich in anti-rotavirus antibodies the diarrhea subsides.

PASTEURIZATION

As previously mentioned, due to the demand for pasteurization of camel milk, clinical trials cannot be performed. Personal observations revealed that the healing effects of camel milk are inhibited after pasteurization. It would be the same as pasteurizing Actimel, a yogurt-type drink, and then looking for a positive health effect. Indeed, camel milk can be considered as probiotics/alternative medicine and should be judged as such. The positive health role of “good bacteria”

in milk is demonstrated by the breast milk of Guatemalan Indians, whose milk has a normal bacteria count of 500,000 bacteria/ml [20].

The Carmela camel farm in Israel has overcome the demand for the pasteurization of camel milk by sending the milk for testing to a certified laboratory to confirm that it is free of pathogens. In Israel the problems with drinking camel milk are twofold. One is the question of *kashrut* (Jewish dietary laws). This has been resolved by the rabbinic authorities agreeing that in the absence of medical treatment, or if the available treatment has adverse side effects as in gestational diabetes, treatment with camel milk is permissible. The second problem is that the therapeutic use of camel milk is governed by the Food Hygiene department of the Ministry of Health and not by the veterinary services, which should be controlling food of animal origin for the Health Ministry. This has led to the medical profession's lack of interest in camel milk and in the indications showing that certain diseases, as mentioned in this editorial, are directly associated with drinking store-bought milk.

CONCLUSIONS

The therapeutic effects from drinking camel milk are known since ancient times, and its benefits offer a new perspective on the etiology of some diarrheal diseases.

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“I was going to have cosmetic surgery until I noticed that the doctor's office was full of portraits by Picasso”

Rita Rudner (b. 1953), American comedienne, writer and actress