

# The enthusiasm for camel production

**Bernard Faye**

*CIRAD-ES, Campus International de Baillarguet, TA/C122, UMR SELMET, 34098 Montpellier Cedex*

The interest for camel rearing and production is increasing strongly for the last 20 years in many countries, including Western countries where the camel is newly implemented. As example, the implementation of camel dairy farms in Netherland, Italy, USA or even in Australia testifies the growing enthusiasm for the camel products, especially milk. This growing interest is partially in relation with the expected medicinal and dietetic “virtues” of the camel milk, and up to a certain point, of the camel meat. This is an important challenge for the camel scientists through the world. Consequently, numerous papers regarding camel are focused on the fine components of their milk potentially in relationship with its properties, empirically or scientifically attested.

The present special issue of Emirates Journal of Food and Agriculture is participating to this approach with several papers on camel milk composition. This composition can be influenced by feeding as for other animals. Cherifa Benmohamed et al., showed that milk from camel living in extensive farming system, i.e. fed with natural pastures, had a higher content in vitamin C than in milk from camel reared in intensive farm. Moreover, this last milk did not contain some fatty acids as lauric, pentadecanoic and heptadecanoic acids contrary to camel living in the Sahara.

In most of the camel countries, milk is consumed fresh or fermented, and in modern sector pasteurized. The form of consumption is mainly under liquid form, more rarely as yoghurt or cheese. Yet, the diversification of the camel dairy products is an important way for developing the camel milk sector in the local economies. In that sense, the studies regarding the yoghurt processing for improving the gel are essential of camel dairy industry. In his paper, Alaa Ibrahim has shown how to improve the quality of fermented product by enhancing  $\beta$ -galactosidase enzymatic activity of different strains of lactic bacteria thanks to suitable rupture-cell method. As stated by Divyang Solanki and Subrota Hati, fermented camel milk is characterized by some health benefits supported by many bio-functional properties

One of the proteins produced by lactic bacteria isolated from camel milk with a potential health effect is bacteriocin. In their paper, Zahia Benmouna et al., showed that the bacterial inhibitory activity induced by some lactic bacteria strains could be optimized by using specific media for the growing lactic bacteria population. From their side, Meriem Toualbia et al., assessed the antagonist effect of one lactic bacteria strain isolated from camel milk (*Lactobacillus plantarum*) against diarrheal bacteria affecting human children. These two papers converge towards the idea of natural antibacterial effect of fermented camel milk. In addition, Mohammed Yahyaa et al., proved that fermented camel milk has a significant hypocholesterolaemic effect on rats. This effect is observable also on the ratio Low (LDL)/High (HDL) density lipoprotein cholesterol contributing to the liver protection, notably to the decrease of steatosis and fibrosis in rats fed with fermented camel milk compared to non-fermented.

Dairy productivity in camel is known to be relatively low compared to the other dairy animals. The improvement of this productivity is an important challenge, too, for the camel sector. Genetic improvement and rational feeding are among the main way for increasing the milk availability in camel as for other farm animals. But a better knowledge of physiology of lactation is also necessary as stated by the review of Kaskous. The adaptation of camel to machine milking is effectively an essential point in modern camel dairy industry. In this review, the author showed that the lactating camel requires longer stimulation, higher vacuum level and faster milking than for cow for example.

Regarding camel meat, less publications are available in the literature compared to those devoted to camel milk, but the interest for camel meat is also increasing in relation with new findings on its high dietetic value: low-cholesterol, high essential amino-acid index, stimulant and hypotensive effect.

In the present issue, one contribution is focused on the seasonal variability of camel meat quality just after

**\*Corresponding author:**

Bernard Faye, CIRAD-ES, Campus International de Baillarguet, TA/C122, UMR SELMET, 34098 Montpellier Cedex France.  
E-mail: faye@cirad.fr; bjfaye50@gmail.com

slaughtering (Brahim Hamad et al.). A seasonal effect is something complex, including physical aspect (temperature and humidity) and feeding. Some parameters like electric conductivity, drip and thawing loss are significantly higher in summer time. But even if safe camel meat could be benefit for the consumer's health, the risk of contamination is still existing. In Kazakhstan, where pollution with PCBs, a lipophilic compound, could be locally important, the unwanted molecules can be accumulated in camel hump (Stefan Jurjanz et al.).

Therefore, practically in polluted areas, it is advised to avoid the consumption of raw fat from camel hump, as is practiced sometimes.

The quality of meat in young camel is depending also of the growth's speed during the fattening. In one trial (Faye et al.), the use of date-palm blocks was suggested to be substituted to concentrates from market, more expensive. The authors showed that there was no significant effect on the growth despite a better efficiency of commercial concentrates. Moreover, although the presence of urea in blocks, there was no effect on blood biochemical parameters, indicator of liver damage.

One of the challenge for camel scientists is the contribution to the improvement of the camel productivity. Finally, few

papers are focused on this point. It is probably in the field of reproduction that more studies were performed, but more rarely on male reproduction performances. In the present issue, two papers are available. In the proposal of Davide Monaco et al., it is about the comparison of two types of Artificial Vagina in order to identify the more efficient equipment for a better yield in the artificial insemination programme. Finally, it appears that there was no difference between equipment with or without a silicone inner liner on the mating time, the global behaviour of the male or the quality of ejaculates.

The high viscosity of camel semen is known to be one of the constraints for the development of artificial insemination in this species. Mohamed Ansari et al., tested different proteolytic enzymes to liquefy the semen and let it more useful for artificial insemination or embryo-transfer. In all treated semen, the viscosity tends to decline and the spermatozoid motility to increase.

Better understanding of the mechanisms supporting the health benefit effect of camel milk, better investigation of the meat quality according to season and potential contamination, improvement of the technologies for the success of artificial insemination were finally the main results of this special issue on camel.