Camel Milk

International Conference: Camel milk overview in the Mediterranean basin

Industrial production of camel milk and international commercialization

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El Oued, Algeria, 22nd of November 2022
Industrial production of camel milk and international commercialization

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Emirates Industry for Camel Milk and Products, Dubai, UAE

International Conference
Camel milk overview in the Mediterranean basin
22 November 2022, El Oued, Algeria
Changes in camel population and milk production worldwide in 60 years from 1961 to 2020

- Camel population: 3.0x since 1961 (1.97% per year)
- Milk production: 5.0x since 1961 (2.94% per year)

FAOSTAT Date: 16 January 2022
Comparison of a dairy camel with a dairy cattle

<table>
<thead>
<tr>
<th></th>
<th>Camel</th>
<th>Cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body weight (kg)</td>
<td>620</td>
<td>650</td>
</tr>
<tr>
<td>Milk production (kg)</td>
<td>7.2</td>
<td>≈40</td>
</tr>
<tr>
<td>Dry matter intake (kg)</td>
<td>13.3</td>
<td>≈25</td>
</tr>
<tr>
<td>Drinking water (l)</td>
<td>45</td>
<td>≈250</td>
</tr>
<tr>
<td>Water for cooling (l)</td>
<td>0</td>
<td>≈500</td>
</tr>
<tr>
<td>Total water use (l)</td>
<td>≈60</td>
<td>≈1000</td>
</tr>
</tbody>
</table>

Daily water requirement (<60 liter) is a fraction of that of a HF cow (>1000 liter)
Camel farming and camel milk consumption

Farming systems
- Nomadic system: 35%
- Semi-intensive system: 24%
- Periurban system: 5%
- Intensive system: 36%

Type of consumption
- Self consumption: 46%
- Gift to others: 10%
- Sold on markets: 44%
Significant development in the last 15 to 20 years
Transition from hand to machine milking

Machine milking in itself does not mean intensive milk production
Small-scale milking farm in Dubai, UAE 2002-2005

Herringbone milking parlour / 5 camels on each side

Wernery at al., JCPR, 2004. 11. 51-57.
Adaptation to machine milking
Parlour designs

- Different parlour frames
  - Individual
  - Tandem
  - Corridor
  - Herringbone

- Presence or absence of the calf
  - Management challenge

- Some designs are not professional, not "user friendly"

- Different extras
  - Electronic ID
  - Milk recording and ARC etc.
Camel specific challenges
Training of dromedaries

High cognitive function, sophisticated mental capacity and learning ability
High variation in animal size, udder and teat shape and size
Selection and development of milking liners

Difficult due to high variability in teat size and morphological changes during milking
Milk-let down without the presence of the calf
Strong seasonality in reproduction and production

Number of deliveries at EICMP from 2015 - 2021

Changes in gross composition of bulk raw camel milk over a three year period

Varga et al., 2015
Characteristics of the lactation curve
Average Daily and Weekly Mean on weekly data

Maximum $\Rightarrow$ 8.4 and 58.8 kg
Peak time $\Rightarrow$ 15th and 16th week
50 % of Max $\Rightarrow$ 86th and 80th week

> 98 % coefficient of persistency after 30th week

N= 190846 of 385 lactations; Nagy and Juhasz, 2016.
Characteristics of the lactation curve
Comparison dromedary vs. dairy cow

> 95% coefficient of persistency for the camel
≈ 91% coefficient of persistency for the dairy cow

50% of peak production is reached by 9 month for the cow and by 20 month for the camel

N= 190846 of 385 lactations; Nagy and Juhasz, 2016.
Legal framework

• UAE animal health and food control regulations

  **Ministerial Resolution No. (106) of 2020**
  Concerning fulfilling the requirements of the European Commission by the establishments proposed to export camel milk products to EU countries

• EU import approval

  **Commission Implementing Regulation (EU) No 300/2013**

• ISO 22 000:2018

• Codex Alimentarius

Quality assurance system

Only happy and healthy camels are able to produce good quality milk close to the maximum of their genetic potential

Animal Health

Herd Health Management Program

1. Animal health and biosecurity program
2. Animal welfare and well-being
3. Breeding and reproductive management

Public Health

Zoonotic diseases
Residue in milk
Milk quality
Food Safety Management System: ISO 22000:2018
Animal health and biosecurity program

Animal health program
1. infectious disease control
2. milking hygiene and mastitis control
3. general animal health (multifactorial or non-infectious diseases, ecto-parasite control)

Biosecurity Plan
1. control of movement of camels and people
2. cleaning and sanitation
3. pest control
4. staff training
Animal welfare and well-being

• OAI Terrestrial Animal Health Code (OAI, 2021) outcome-based or animal-based criteria

• Dromedaries are not mentioned specifically but criteria for dairy cattle can be applied

• Measurable criteria are useful and suitable to monitor and evaluate animal welfare and the efficiency of herd health management program

• Morbidity, mortality and culling rates, body condition, milk yield, physical appearance, reproductive parameters, behavior and handling response, complications from common procedures

• Measurable, animal health related food safety objectives
## Intensive camel dairy

### Advantages

- Regulated by national and international standards and legislations
- Continuous veterinarian supervision
- Controlled use of drugs
- Monitored raw milk quality and antibiotic residue
- Stable feed and water supply
- Improved animal health and welfare

### Disadvantages

- Confined animal movement
- Emotional judgment of local people
- Gap between professional and traditional animal husbandry and herd management
- Increased risk of spreading diseases
- Increased risk of emerging new diseases
- Increased risk of developing antibiotic resistance
100% Quality

ESMA-UAE
AVA - Singapore
USDA - USA
ISO 22000-2005
MINISTERTVO
СЕЛЬСКОГО ХОЗЯЙСТВА
РОССИЙСКОЙ ФЕДЕРАЦИИ
Russian Federation
EU Commission
Camelicious® Nation's Milk
Elements to sell camel milk internationally

• To develop camel milk products with long shelf-life
• To meet all statutory requirements, regulations in the importing country
• To work our transportation and logistic routes
• To understand the specific needs and requirements of each market/country
• To create awareness and conduct marketing campaigns
• This process never stops as the world is changing constantly and we have to adapt simultaneously (i.e. new regulations to export to the UK after BREXIT).
Importance of awareness to camel milk

- An integral part of our export strategy
- Awareness through various communication channels
- Requires huge marketing budget in order to target health-conscious, mainstream consumers.
- Camel milk is well known among ethnic groups in several western countries, but consumers are scattered and may not have the purchasing power for such a niche product.
- Camel milk products are expensive. We expect consumers to spend much more for camel milk compared to cow milk. For example, in the UK, the price of one liter of camel milk reaches 12 pounds compared to 1 to 1.6 pounds for one liter of cow milk.
Representation in various countries and distribution channels

- GCC countries
- EU and UK markets
- US
- Japan
- China (through on-line platform)
- Our products have been listed in some major supermarket chains such
  - ASDA in the UK
  - METRO in Germany
  - Walmart in the US (for on-line sales)
  - Amazon (on-line sales).
- Owing to the presence of our products on the shelves of these big distributors our sales are growing steadily each year
Product
Range

Camelicious® Nation's Milk

Stock Keeping Units (SKUs)

• > 60 SKUs
• Dairy
  • Liquide
  • Butter and fat
  • Powder
• Beverages
  • Coffee
  • Endurance drink
• Frozen
  • Ice cream
• Functional food
  • Infant formula
• Confectionary
• Snacks
Plain and flavored milk range

الحليب الطازج والحليب بنكهة
Long Life Milk

حليب طويل الأمد
20 grams x 24 sachets-Whole milk powder
20 جرامًا × 24 ظرف من مسحوق الحليب الأبل كامل الدسم
Gift Box-Milk Powder

Whole camel milk

20 gm x 08 sachets

Camelicious® Nation's Milk
Ice Creams

10 flavours – 125ml and 400 ml
Conclusions

• Camels are an important food source in arid and semi-arid regions
• Camel population is growing world wide but their milk production potential is not exploited fully
• Intensification started 15 to 20 years ago but such production system is not widespread
• Intensive camel milk production requires a significant initial investment and pre-requisite programs
• Dromedaries can be integrated efficiently into an intensive production environment, the implementation and the strict execution of a Herd Health Management program is necessary
• Intensive camel milk production is sustainable, a good animal health status can be maintained and the welfare requirements of the animals can also be fulfilled
• International commercialization of camel milk require requires to meet all statutory requirements, regulations in the importing country
• Also, significant marketing budget and awareness campaigns are needed to target health-conscious, mainstream consumers and understand market demands.