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CAMEL AS A QUADRUPED ANIMAL; SHIP OF THE DESERT

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ABSTRACT

Camels are working animals especially suited to their desert habitat and are a vital means of transport for passengers and cargo. Camels are special due to their unique adaptations for surviving in harsh desert environments, such as storing fat in humps for energy, conserving water with specialized kidneys and efficient blood cells, and having physical features like padded feet and sand-protecting eyelashes and nostrils. These traits allow them to travel long distances with heavy loads, go without water for extended periods, and withstand extreme temperatures.

KEYWORDS: dromedary, Bactrian, hump, desert, adaptation, eyelids, sand.

INTRODUCTION

Camel is **Dromedary** (for a one-humped camel) or **Bactrian** camel (for a two-humped camel). Other terms include the Arabian camel, one-humped camel, or the nickname "**ship of the desert**".

Taxonomy

- Kingdom: Animalia
- Phylum: Chordata
- Class: Mammalia
- Order: Artiodactyla
- Family: Camelidae
- Tribe: Camelini
- Genus: Camelus
- *Camelus dromedarius, Camelus bactrianus, Camelus ferus*

Figure 1: Dromedary camel (for a one-humped camel) and Bactrian camel (for a two-humped camel).

A camel is an even-toed ungulate in the genus Camelus that bears distinctive fatty deposits known as "humps" on its back. Camels have long been domesticated and, as livestock, they provide food and textiles.[1-4]

Speed: 65 km/h (Maximum, In Short Bursts, Running)

- ✓ Height: 1.8 m (Adult, At Shoulder)
- ✓ Lifespan: 40 – 50 years
- ✓ Mass: 300 – 1,000 kg (Adult)

Camels are known for their adaptations to desert life, such as their ability to survive long periods without water and their unique humps that store fat, not water. They are also physically adapted to their environment with long eyelashes to keep sand out and wide feet to walk on sand. Camels can drink large amounts of water quickly, have nutritious milk, and can carry heavy loads, making them important for transportation and sustenance. Camels are special due to their unique adaptations for surviving in harsh desert environments, such as storing fat in humps for energy, conserving water with specialized kidneys and efficient blood cells, and having physical features like padded feet and sand-protecting eyelashes and nostrils. These traits allow them to travel long distances with heavy loads, go without water for extended periods, and withstand extreme temperatures.

1. Desert Adaptations

Thick humps: Humps are composed of fat and muscle, which provides energy when food is scarce. This counters the common misconception that they store water. Camels store fat in their humps, which provides a source of energy when food is scarce.

Water conservation: Camels can survive for long periods without drinking, and when they do drink, they can consume up to 30 gallons in a few minutes. Their blood cells are also uniquely oval-shaped, which helps them flow through the body without blockages when water is scarce. They can drink up to 100 liters of water at a time and can tolerate losing up to 30% of their body weight in water without ill effects.

Their kidneys are very efficient at reabsorbing water, resulting in thick, syrupy urine and very dry feces.

Their fur helps reduce sweating, and their blood cells are designed to retain moisture.

Protection from sand: Their long eyelashes and ability to close their nostrils help protect their eyes and nose from sand and dust, even during sandstorms.

2. Physical Characteristics

Types: There are two main types of camels: the dromedary, which has one hump, and the Bactrian, which has two.

Feet: Their wide, flat feet with two toes are adapted for walking on soft sand, which is why they are called the "ships of the desert".

Mouth: They have a split upper lip that can move independently, allowing them to more easily eat tough, sparse desert plants.

3. Transportation and Strength

Load bearing: Camels are strong animals that can carry heavy loads. A large camel can carry up to 200 kg (440 lbs) on its back for extended periods.

Speed: They are also fast runners and can travel at speeds of up to 40 miles per hour. Broad, padded feet prevent them from sinking into the sand. They can travel long distances and carry heavy loads (up to 600 kg).

4. Milk and Other Uses

Nutritious milk: Camel milk is highly nutritious, rich in protein, vitamins, and minerals, and is a staple food source for many desert communities.

Versatility: In addition to milk, camels are used for transportation, their hair is used in the textile industry, and their skin is used to make leather.[5-8]

5. Social Behavior

Social animals: Camels are social animals that live in groups called herds.

Communication: They communicate through various sounds, including moans and bellows.

Lifespan: Camels can live for a long time, with some reaching up to 50 years of age.

6. Temperature Regulation

They are heat tolerant and can tolerate a high internal body temperature, rarely sweating. Their thick coats also help insulate them from both heat and cold.

7. Special Characteristics: Diet

They can eat thorny plants, salty plants, and even fish, using their flexible, independent-moving lips to get near the ground for short grass.

Intelligence: Camels are intelligent animals that can remember paths they have traversed, helping them not to get lost.

Uses: They are used as beasts of burden and for providing milk, meat, wool, and leather.

The three known species of Old -World camels include the one-humped domestic dromedary (*Camelus dromedarius*), the two-humped domestic Bactrian camel (*Camelus bactrianus*) and the Critically Endangered two-humped wild camel (*Camelus ferus*). Its nearest rivals weighed a bit less but overlapped in mass such as Titanotylopus at up to 2,486 kg and the Syrian camel at around 1,600-3,000 kg. With weights estimated to be up to nearly 4 tons (1,748-3,695 kg), Megacamelus seems to have been roughly twice as heavy as a giraffe.

Figure 2: Wild camel (Endangered two-humped).

Camel milk is good for health due to its rich nutritional profile, including vitamins, minerals, and unique compounds that offer potential benefits for digestion, immunity, and managing blood sugar and cholesterol. It is lower in fat and lactose than cow's milk, making it easier to digest for some, and contains anti-inflammatory properties. However, it is essential to ensure the milk is pasteurized to avoid the risk of illness.

Nutritional benefits

- Rich in nutrients: Camel milk is packed with vitamins (C, A, B1, B2, D) and minerals (calcium, potassium, magnesium, zinc, iron). Camel milk is packed with vitamins (A, B, C, D, E) and minerals (like potassium, zinc, and iron), as well as beneficial fatty acids. Higher vitamin C: It contains more vitamin C than cow's milk, which acts as an antioxidant and supports immune function.
- Good fats: It contains healthy unsaturated fatty acids, including omega-3s, which are beneficial for heart health.
- Good for lactose intolerance: It contains less lactose than cow's milk, making it a more tolerable option for many people with lactose intolerance.[9-13]

Figure-3: Camel eye, mouth, foot.

Potential health benefits

- Improved digestion: It may be easier to digest due to lower lactose content and the presence of probiotic bacteria, which can help with digestive issues like IBS.
- Immune support: Camel milk contains components like zinc and lactoferrin that can help boost immunity. Strengthens the immune system: It contains antibodies and compounds like lactoferrin, which have antimicrobial and immune-boosting properties.
- Blood sugar management: It has an insulin-like protein and other components that may help lower blood sugar levels and improve insulin sensitivity, which is beneficial for managing diabetes. Camel milk is a source of insulin and insulin-like proteins that may help lower blood sugar levels and improve glycemic control, particularly for those with Type 1 diabetes.
- Anti-inflammatory effects: Its antioxidant properties, including superoxide dismutase and lactoferrin, can help reduce inflammation.
- Heart health: Its antioxidant, anti-inflammatory, and lipid-lowering properties may contribute to better cardiovascular health. The milk has anti-inflammatory properties and may help lower cholesterol levels, which can contribute to better heart health.
- Potential benefits for skin: Its antibacterial and anti-inflammatory properties may help with conditions like acne and promote healthier-looking skin.
- Antioxidant properties: It contains antioxidants like selenium, which help protect the body from cell damage.
- Autism support: Some studies suggest camel milk may help improve symptoms in children with autism.
- Bone health: The calcium and phosphorus content

supports healthy bones and teeth.
- Availability: Camel milk is not as readily available as other milk types.
- Safety: Always ensure the camel milk you purchase is pasteurized to avoid the risk of illness from bacteria.
- Further research: While promising, some of the health claims, particularly for conditions like cancer, require more research to be fully understood.

Camel urine is highly concentrated. Camel urine is a concentrated liquid, a result of the camel's highly efficient kidneys reabsorbing water. Basic pH: Unlike human urine, which is acidic, camel urine is typically basic, with a pH of 7.8 or higher. Composition: It contains a high concentration of salts, urea, and uric acid, along with various other compounds like creatinine, iron, zinc, and magnesium. Some studies have also identified nanoparticles, crystals, and nano-rods. Camels are herbivores that eat plants like grasses, leaves, twigs, and thorny bushes. Their tough lips and mouths, lined with firm papillae, allow them to eat plants that other animals would avoid, such as cacti and salty or prickly plants. They also eat grains, hay, and certain vegetables as treats.

Grasses, leaves, and twigs: These are a staple of the camel's diet, along with shrubs and herbs.

Thorny and salty plants: Camels can eat thorny bushes, cacti, and salty plants because their mouths are tough and protected by fleshy protrusions (papillae).

Grains and hay: In domesticated settings, they are fed dry grasses, hay, and grains.

Vegetables and treats: They can have vegetables like carrots, beets, and pumpkins as occasional treats.

Browse instead of graze: Camels often browse on branches and trees rather than just eating from the ground.

Ruminate: Like cows, they regurgitate their food (cud) to chew it again, which helps them digest tough plant matter.

Adaptable diet: Their ability to eat a wide variety of vegetation, including things other animals can't, helps them survive in harsh environments where food is scarce. Their lips and tongues are tough, and they have mouths lined with firm papillae (fleshy protrusions). These help camels manipulate and swallow their food opens in a new window, but also prevent it from scraping, poking or otherwise injuring their mouths. Not only are their facial features adapted to suit the harsh desert environment, but the camel's legs are also aligned so as to move easily and swiftly through sand and they have wide, soft feet which not only enable them to walk long distances, but also prevent them from sinking into the sand, thus saving energy. Camels bear all their weight on the two middle toes of each foot like yaks, hippos, giraffes, antelopes, water buffalos and other large herbivores, including our own cosy farmyard animals: cattle, sheep, pigs and goats – cloven footed animals, as the bible would have it; even-toed ungulates for those with a taste for food.

CONCLUSION

Camels inhabit hot, dry deserts, rocky mountains, and cold deserts in Asia, Africa, and the Middle East, with a significant feral dromedary population in Australia. Bactrian camels (two-humped) are found in Central Asia, including the Gobi Desert, and are adapted to extreme temperatures. Dromedary camels (single-humped) live in arid regions of North Africa and the Middle East.

Dromedary camels
Habitat: Arid and semi-arid regions of Africa, the Middle East, and northern India, especially the Sahara Desert.
Distribution: Mostly domesticated, with large feral populations in the deserts of central Australia.

Bactrian camels
Habitat: Cold deserts and rocky highlands in Central Asia, including the Gobi Desert.
Distribution: Wild populations are found in Mongolia and northwestern China, while most are domesticated.

Adaptations
Thick coat: Protects from both the scorching sun and extreme cold.
Humps: Store fat for energy, allowing them to survive long periods without food.
Nostrils: Can be closed to keep out sand during storms.
Long eyelashes and ear hair: Also help keep sand out of the eyes and ears.
Wide, padded feet: Prevent them from sinking into sand.

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