

## From Ancient Domestication to Modern Solutions: The Camel's Importance in Egypt

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### ABSTRACT

First presence of camels was since 40 million years ago in the North American continent. In Egypt, camels were domesticated before 2000 B.C. in conjunction with the invasions of both Assyrian and Persian. In ancient Egypt, camels were used in army or journey as the king Alexander III did. Also, king Juba used the camels in 46 B.C. to fight Julius Caesar. Moreover, in 331 B.C. After their domestication in Egypt, camels spread to the Mediterranean coast from Nile Nubia after 1500 B.C. and diffused to North East of Arabia Over time, knowledge of the importance of camels increased, and considering as a sustainable ruminant that help in solving the current and coming challenges such as climate change and the increased demand of animal protein. In this review, the historic origin of camels in Egypt and its uses in the ancient world will be discussed, beside to the current importance of camels in Egypt.

**Keywords:** Camels, history, origin, camels importance

### INTRODUCTION

The domestication of camels seems to be a complex issue and the original reason for their domestication is more or less a matter of speculation. It is suggested that, camels' domestication was at the third millennium B.C., after 2000 years after donkey and 5000 after bulls (Sala, 2017). In Egypt, camels' domestication was during the period between 6<sup>th</sup> and 7<sup>th</sup> centuries. Others clarified that, the domestication of camels in Egypt was during the period 13-12 century B.C., and they were used in army and journey (Saber, 1998).

Without camels' domestication in the last centuries, human survival in different zones would be in challenge. Because, they were used in riding, holding, and as a source of meat and milk (Burger, 2016). Also, used in trading through their ability to walk for a long distance and connecting the continents, such as Arabian Peninsula reaching to the Far East. Nowadays, camels gained more attention all over the world due to their features that allow them to withstand the harsh environmental conditions in comparison with the other ruminant animals. In addition to the use of camels in racing which have gained global attention in the current period.

Historic origin of camels in Egypt:

Camels belong to family of Camelidae (so their name refers to the name of their family), which is found in North America since 35 million years ago (Reed, 1972), camels could be divided into two types, small and large camels and subdivided into three types, Camelus, Llama and Vicugna (Figure, 1). The large camels are consisting of two types, the first one is one-humped dromedaries (*Camelus Dromedarius*) and the another one is two-humped Bactrian camels (*Camelus Bactrians*), that discovered in 1878 by Nikolaj Przewalski (Faye and Konuspayeva, 2012 and Bruger et al., 2019). Another classification for camels, divided into old world camels (Camelini) and new world camels (Lamini, Figure, 2), and the main ancestor for both dromedary and Bactrian camels is the Wild Bactrian camels (Burger, 2016).

The difference between dromedary and Bactrian camels are; the dromedary camels known as Arabian camels that live in hot arid regions between East of Asia and the northern parts of Africa. Meanwhile, the Bactrian camels are domesticated in the cold regions and desert of central Asia. (Ali et al., 2019).

Concerning Egypt, the camels were domesticated in Egypt before 2000 B.C. almost during the period of the 6<sup>th</sup> and the 7<sup>th</sup> century, in conjunction with the invasions of both Assyrian and

Persian. However, Lefebure (1906) stated that the Assyrian did not use camels in their army, so they could not be the reason of intering camels in Egypt. While, the allied Arab troops may have imported the camels. Additionally, the author stated that, the presence of camels in Egypt was at 700 B.C. Zeuner (1963) and Epstein (1971) mentioned that, king Juba used the camels in 46 B.C. to fight Julius Caesar. Moreover, in 331 B.C., Alexander III used camels in his journey to Siwa oasis (Saber, 1998). After their domestication in Egypt, camels spread to the Mediterranean coast from Nile Nubia after 1500 B.C. and diffused to North East of Arabia (Clark and Brandt, 1984).

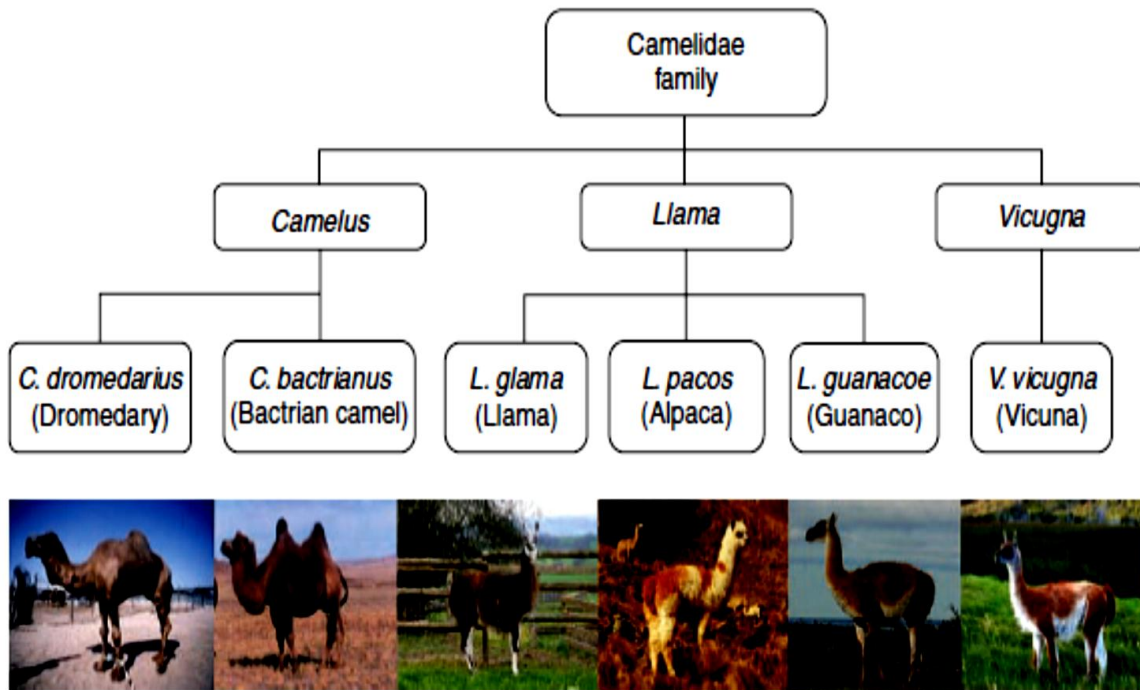


Figure (1). Classification of camels (Kadim et al., 2013)

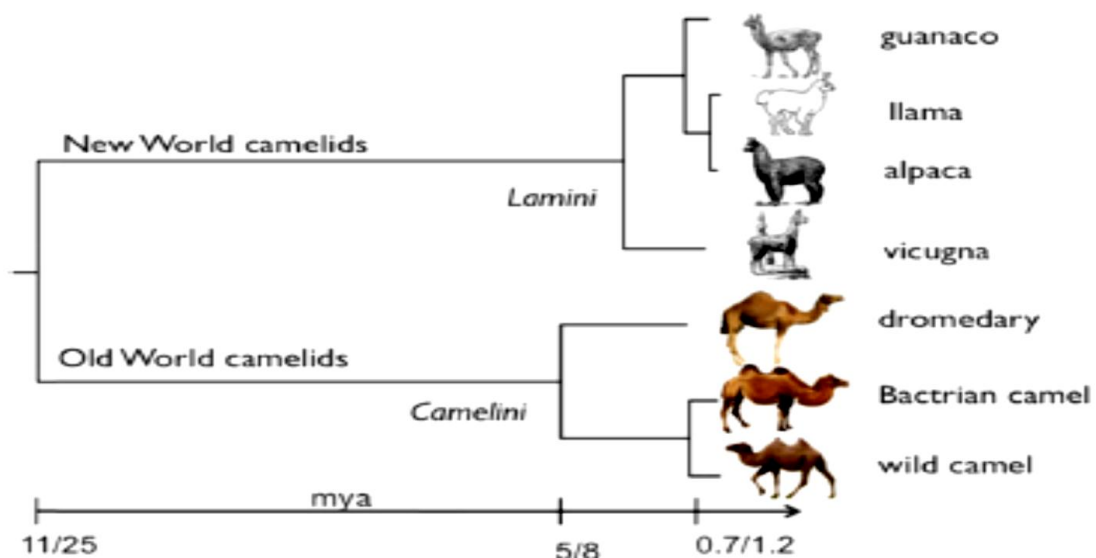


Figure (2). The old and new world camel's classification

### The Uses of Camels in Ancient World

During the third millennium, both dromedary and Bactrian camels were used in many directions, transporting riding (as pack animal), military, etc.....

The ship of desert (camels) was used for carrying arches and human preferred camels during the invasions, because they are calm and much stronger. In Syria at 190 B.C., the Romans encouraged to use camels in the battle of Magnesia. In the same context, in 853 about 1000 camels used in the battle of Qarqar, that was between Assyrian and Israel. The same was for the Bactrian camels that entered as military animal during the period 500-100 B.C. However, its uses were not considered a challenge because they are much slower than the dromedary camels. Additionally in the second millennium, the dromedary camels were used as domestic animals, for example, in Egypt at the date of 1200, camels were used for carrying water and this was documented archaeologically, (Photo., 1). Moreover, the dromedary camels were used in overland trade routes from western of Arabia reaching to Sabaeen coast in Egypt (Sala, 2017). As for Bactrian camels, they used as a draft (or pack animal) as found in Kazakhstan in the beginning of the Bronze Age. In Chinese culture, camels were taken from the military campaigns and / or used as diplomatic gift or used in protagonist in the funerary rituals. Saber, 1998).



**Photo (1).** Camel holding water jars in Assiut (Saber, 1998)

### Archaeological Discovers

Globally, documents were found clarified the dromedary bones in different cities such as, the bones found in southern Arabia an belong to the date 500-400 B.C. The same was found in Egypt, which dates back to the time period 2500 B.C. In 3000 B.C., a petroglyph depicted for hunting camels were discovered in Saudi Arabia (Photo, 2) and another petroglyph was discovered in Egypt during the period of the Bronze Age (twelve century B.C. (Sala, 2017).



**Photo (2).** Hunting dromedary camels in Saudi Arabia 3000 B.C. (Sala, 2017)

The archaeological findings cleared that, the main region for dromedary camels' domestication was in Arabia, few in Egypt and very few numbers in the Middle East. Furthermore, the camels were well known in the Ages of Sumerian and Babylonian (Sala, 2017).

For Bactrian camels, actually about 50-85% of discovered Bactrian bones belong to the Neolithic Age (the period between 5500-3500 B.C.). Moreover, in the Eastern part of Iran, Bactrian camels were the only native animal in Iran, that lead to put this animal as a symbol on the archaeological findings (during the first half of the third millennium B.C.) in Sailk and Khorab (Olsen, 1988).

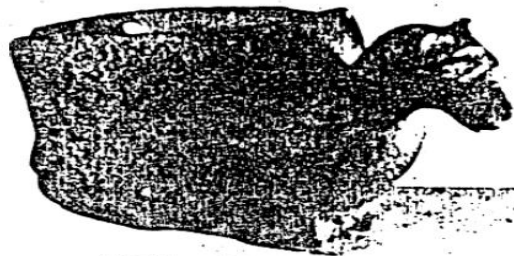
In the fourth millennium B.C., it was found Bactrian camels bone at farming settlements located in part of southern Turkmenistan. In Sistan (South East of Iran), woven hair and bone for Bactrian camels, estimated date 2700-2500 B.C. were discovered,. Camels were domesticated in these

areas later than Turkmenistan (Wapnish, 1981). Furthermore, the Assyrian king Shalmaneser III painted two Bactrian camels on the black obelisk during 858-824 B.C. and these discoveries represent the oldest prove (the presence of domesticated Bactrian camels in the Middle East for Bactrian camels' domestication in the Middle East (Potts, 2004 and Sala, 2017).

### **The Camels Archaeological Discovers in Egypt**

There have been many discoveries related to camels proposed in Egypt during the period 2500-1400 B.C. after their domestication in the Arabia. The rock engravings and archaeological findings were the main evidence for their domestication from prehistory until the Roman Age, when they were well known in this historical era.

In the area of Abusir- El Melek (South of Cairo), Moller (1906) found ointment jar shaped with sitting camel (Photo, 3), belong to the period of 3200- 2900 B.C.



**Photo (3).** Ointment jar with shape of sitting camels (Saber, 1998)

Additional findings for dromedary camels in the district of Ezbet El-Walda (near to Helwan). Moreover, Petreie (1903) discovered camel head in the area of Abydos (located in Suhag). Some believed that, the discovery was for donkey head not for camel. However, after that it was proven that the discovered head belongs to camel (Photo, 4). Cato-Thomposen (1934) found in Fayoum governorate a hair cord and he thought that the cord came from a camel, which may be used in gypsum mines. After testing it, it was discovered that, the cord was related to a sheep, not a camel. In the Southern of Egypt (may in Nubia), the dromedary appeared via invaders came from the Arabia. Additionally, Rowley – Gonway (1988) found some camel remains (teeth and dried feces) in Qasr Ibrim, which is located in the south of Aswan, and he succussed to test these remains by using radiocarbon. Generally, the single-humped camels acquired great position in the Egyptian trade, especially with the beginning of the Roman Age and this confirmed from numerous discoveries. Another evidence for camels in Egypt, a rock graving discovered in Upper Egypt, this graving shows a man leading a camel (Photo,5) and there were seven hieratic characters on the man's left (Saber, 1998).



**Photo (4).** Camel head (Saber, 1998)



**Photo (5).** A man leading a dromedary camel

Other objects from Egypt include a lime-stone container, missing the lid, in the shape of a lying dromedary carrying a burden from a first dynasty tomb at Abusir el-Meleq, 28 and a terracotta tablet with a depiction of men riding and leading camels, dated to the pre-dynastic period (Photo, 6).



**Photo (6).** Container shaped as a Dromedary with a burden, Berlin Egyptian Museum

### **Camels' Importance**

Since 1989, FAO suggested that the minimum requirements of animal protein per capita is 93.3 g protein/ cap/ day. Unfortunately, in Egypt the daily per capita share of animal protein is 18.2 g (El-Badawi, 2018). By 2050, it is expected that the demand of animal protein will rise to reach to 400%. This requires manpower to expand and enhance their production capabilities. Additionally in the last few decades, the scientists pointed to a very important problem, which is climate change. That represents the environmental, economic and social challenges due to its negative impacts on both agriculture and livestock sectors (Al Jassim and Sejian, 2015).

The livestock sector has a vital role in food supply, especially with the expected increasing of animal protein demand with the growing population. However, the ruminant animals can handle with the climatic changes to a certain limit, but they lose their adaptive mechanisms with severe changes in the climate, this leads to huge economic loses.

Therefore, with the expected scenarios of climate change, attention must be directed to an important animal which is the camel. Camels are considered as the ideal solution for protecting the socio-economic status, due to their unique morphological and biological features that enable camels to withstand the severe changes in climate (Sejian et al., 2015). Including a great tolerance to harsh temperatures, solar radiation, water scarcity by conserving water in blood not through in their hump as most people suppose, the hump actually is a fat reserve. Moreover, they have high efficiency in the metabolic process. Because they transform the low-quality plants (poor desert plants, thorny plants and the branches of the hard tress) with minimal nutritive elements, into high quality food products; meat (meat contains less fat than lamb or beef) and milk (its milk contains between 3 and 10 times more vitamin C than cows' milk. It also contains lower  $\beta$ -casein and no  $\beta$ -lactoglobulin resulting in its hypo-allergic property). The globalization of local camel manufactured products and a possible access to national and international markets with their increasing part of expatriate population coming from

south countries implies that, they must be competitive enough with the global markets products in quality and give possible new benefits to a population eager of high health/nutrition products. However, the current situation allows only for margin innovative products in the market, which provide trivial value to rural producers. Thus, to utilize camels' potential, they need to undergo genetic improvement while sustaining their genetic diversity. Through multi-trait genetic improvement programs, not only production traits can be improved, but also health traits such as resistance to various diseases and parasites. Camel populations studied have a high genetic variation, with large number of private alleles. They may be used to increase the genetic variability of other camel populations. Results evidenced that, the studied populations were not well differentiated and an admixture process between them had occurred, indicating the absence of clear genetic differences between them. Such information is essential for the establishment of a strategy for the preservation, utilization and genetic improvement.

Knowledge on genetic diversity and structure of camel populations is fundamental for sustainable herd management and breeding program implementation in this species. (Cherifi et al., 2017). Currently, many attention is paid by by several researcher to confirm the tremendous importance of camels in Egypt as mentioned by Ashour and Abdel-Rahman (2022).

### CONCLUSION

Since a long time ago of camels' domestication, their importance was limited for holding, trading, using in war, but not as a miracle animal that can produce although lives in harsh conditions. Recently, camels can play a miracle role in food security, especially if they receive more attention and updating studies that help in maximizing their productivity and thus increasing their role in the animal production sustainability.

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## الملخص العربي

### من التوطن القديم إلى الحلول الحديثة: أهمية الإبل في مصر

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كان أول وجود للإبل منذ 40 مليون سنة في أمريكا الشمالية. وفي مصر، تم تدجين أو توطن الإبل قبل 2000 عام قبل الميلاد بالتزامن مع غزوات الآشوريين والفرس. وفي مصر القديمة، كانت الإبل تستخدم في الجيش أو الرحلات كما فعل الملك الإسكندر. ومع مرور الوقت، زادت المعرفة بأهمية الإبل، واعتبارها من المجترات التي تساعد في حل التحديات الحالية والمقبلة مثل تغير المناخ وزيادة الطلب على البروتين الحيواني. في هذه المقالة، سيتم مناقشة الأصل التاريخي للإبل في مصر واستخداماتها في العالم القديم، إلى جانب أهميتها في مصر.

الكلمات الدالة: الإبل، الأصول التاريخية، أهميتها