



Isolation And Purification of Lactoferrin from Camel Whey by Ion-Exchange Chromatography

Mebarki Abdelouahab*, Mokhtari Nassima Amel., Cherrak Sabri.

Laboratory of Physiology Pathophysiology and Biochemistry of Nutrition (Ppabionut), SNVSTU Faculty, Abou Bakr Belkaid TLEMCEM University, Algeria.



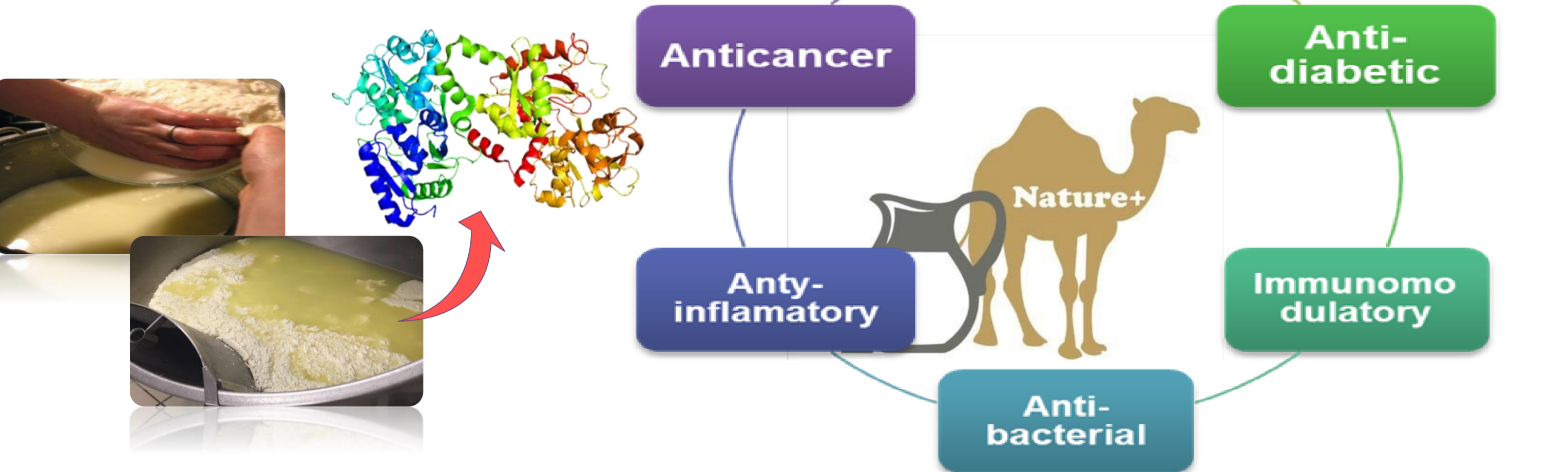
E mail : mebarki.microbiologie@yahoo.com

1 Introduction

The camel (*Camelus dromedarius*) is of significant socio-economic importance in many arid and semi-arid parts of the world and its milk constitutes an important component of human diets in these regions. Camel milk has very unique composition rich in whey proteins and is very similar to human milk. camel whey contains a higher content of anti-microbial factors such as lysozyme, immunoglobulins and lactoferrin.

Lactoferrin has long been considered a simple iron chelator protecting against bacterial infections by its ability to deprive bacteria of the iron necessary to their growth. Over the past ten years, new biological functions orchestrated by lactoferrin have been discovered such as antioxidant, antibacterial, antifungal, antiviral, immunomodulatory and anticancer activities.

Multiple biological functions



2 Material and methods

Camel milk obtained from southern Algeria

Frozen (-20°C)

skimmed by centrifugation in an acid medium (10% acetic acid)

casein

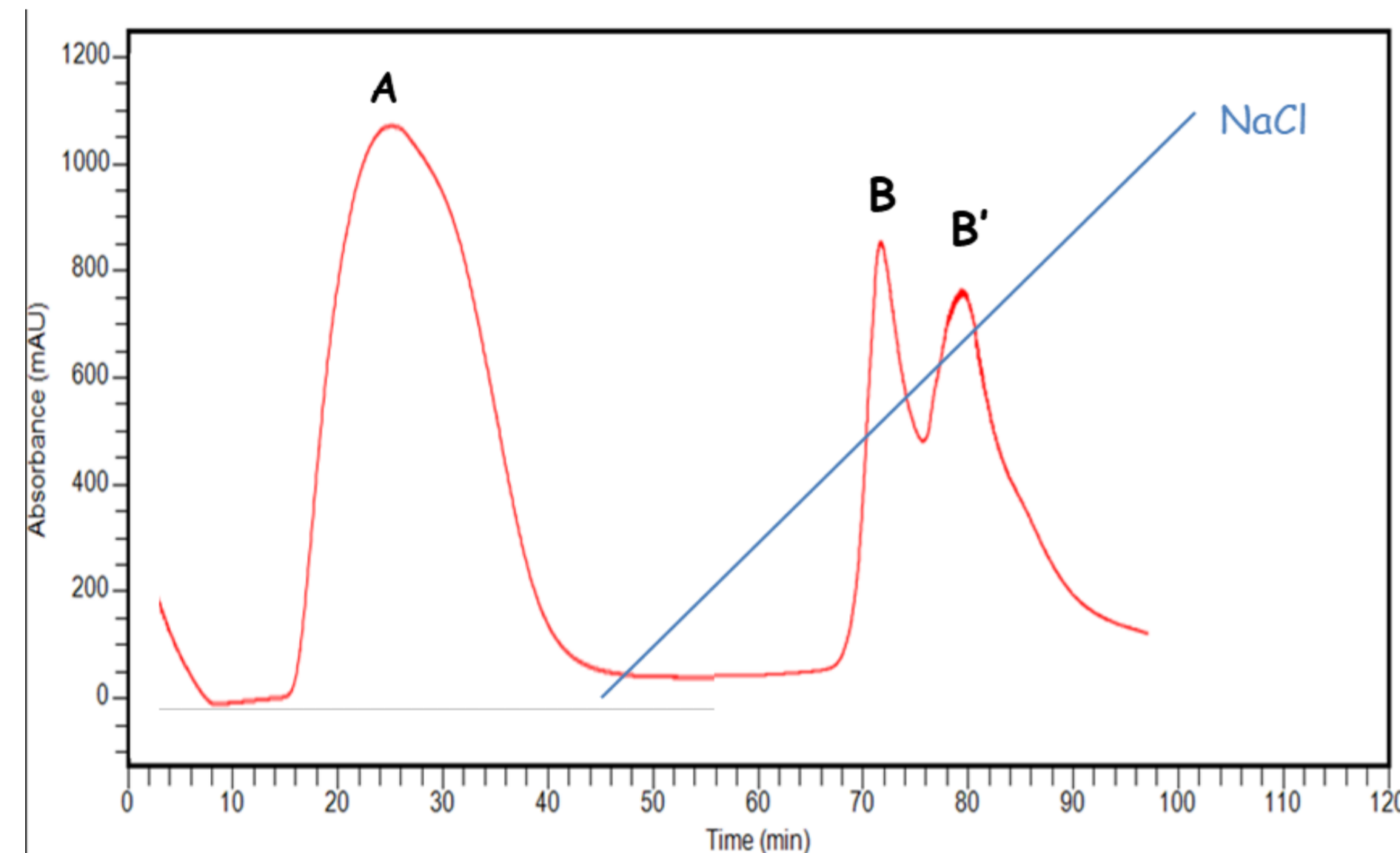
Separated whey comprises a heterogeneous group of proteins which includes serum albumin, α-lactalbumin, immunoglobulin, lactoferrin and peptidoglycan recognition protein.

Using 12% polyacrylamide gel electrophoresis (SDS-PAGE) in terms of its molecular weight

Ion exchange chromatography

The current research work aimed to Isolate and purificat lactoferrin from camel whey.

3 Results and Discussions



Fractions A (0-50) eluted at 0.1 M sodium phosphate buffer (pH6)

Fractions B (50-100) eluted with a linear gradient 1 M NaCl

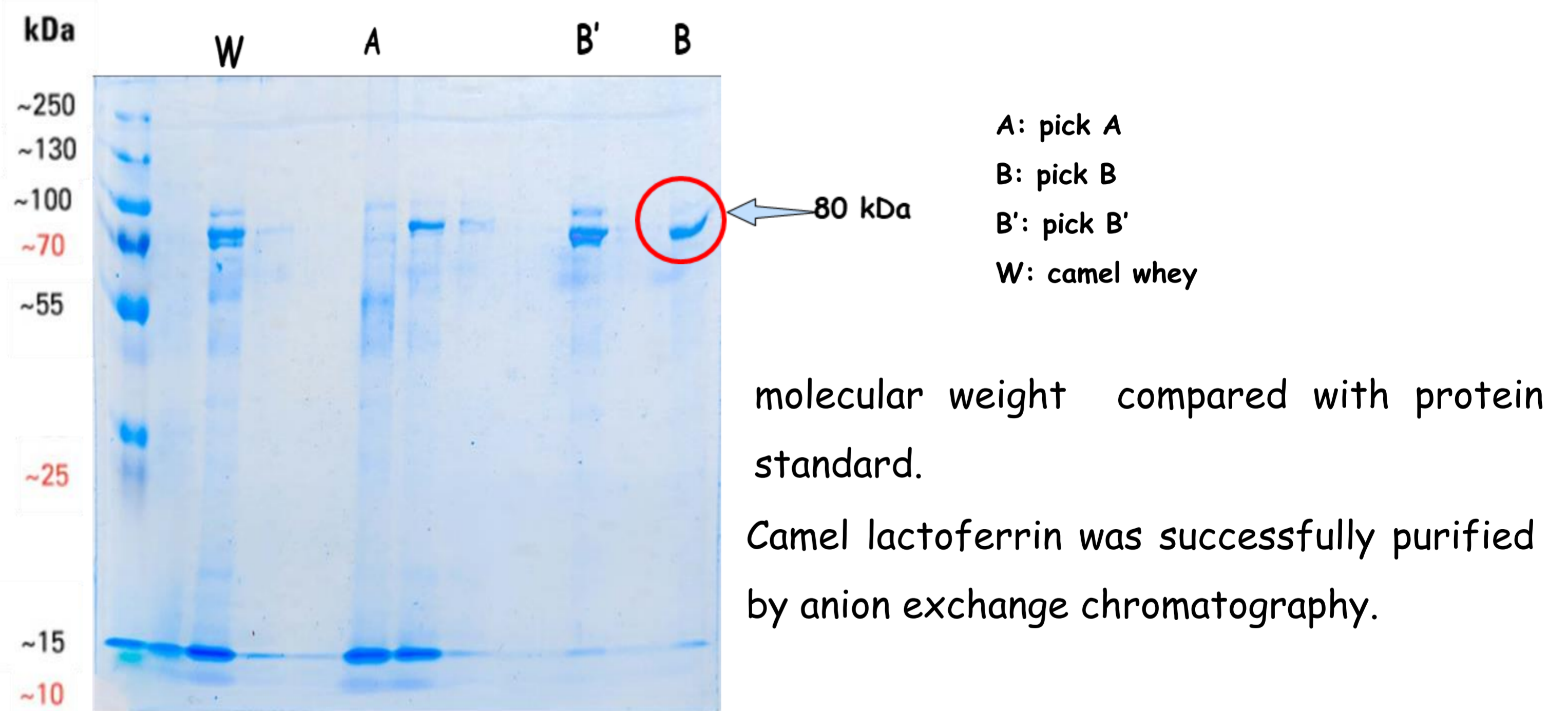


Figure2 : SDS-PAGE of lactoferrin profile. 12% SDS-PAGE of camel lactoferrin during purification on anion exchange gel chromatography column (A)

4 Conclusion

The present study demonstrates the efficacy of anion exchange chromatography for isolation and purification camel whey lactoferrin and provides a useful tool to infer the optimum conditions for the purification process of lactoferrin from Camel whey.

The results of the study point method to obtain pure lactoferrin from camel whey.

Bibliographic references

- Jafar, S., et al., Camel whey protein hydrolysates displayed enhanced cholesteryl esterase and lipase inhibitory, anti-hypertensive and anti-haemolytic properties. 2018. 98: p. 212-218.
- Salami, M., et al., Recollection: Camel milk proteins, bioactive peptides and casein micelles. 2017. 24(2): p. 181-182.
- Ebrahim, F., et al., Purification of Lactoferrin from Camel colostrum and Protein Profiles of Camel and Bovine Milk. Alexandria Journal of Veterinary Sciences, 2019. 60(2).
- Panwar, R., et al., Camel milk: Natural medicine-Boon to dairy industry. 2015.
- Alavi, F., et al., Nutraceutical properties of camel milk, in Nutrients in Dairy and their Implications on Health and Disease. 2017, Elsevier. p. 451-468.
- Abrahale, A. and S.J.J.o.a.a.r. Leta, Medicinal value of camel milk and meat. 2018. 46(1): p. 552-558.
- KARAMAN, A.D., et al., Gross composition of raw camel's milk produced in Turkey. 2021.
- Shinkafi, T.S., et al., Hypolipidemic and Antioxidant Effects of Camel Milk in High Fat Diet Fed Hyperlipidemic Rats. International Journal of Medical and Biomedical Studies, 2019. 3(2).
- El-Hatmi, H., et al., Comparison of composition and whey protein fractions of human, camel, donkey, goat and cow milk. 2015. 65(3): p. 159-167.
- Maqsood, S., et al., Comparative characterization of protein and lipid fractions from camel and cow milk, their functionality, antioxidant and antihypertensive properties upon simulated gastro-intestinal digestion. 2019. 279: p. 328-338.

