CHEMICAL COMPOSITION OF CAMEL MILK - A META-ANALYSIS AND META-REGRESSION STUDY

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Abstract - Camel milk is an essential nutrient for humans in arid and semiarid regions. This study aimed to evaluate the chemical composition of camel milk using a meta-analysis approach. The objective was to provide generalizable results for camel milk composition, ensuring that the results are broadly applicable for optimizing camel milk production and quality. Four search databases and bibliographies were used: PubMed, ScienceDirect, Springer, and Scopus, from January 1984 to August 2024. As heterogeneity was high between studies, the parameters were analyzed using a random-effects meta-analysis model. This systematic review and meta-analysis included 84 studies conducted in English across 18 countries. Statistical analysis showed that the heterogeneity between studies was high (>60%) for all parameters. Publication bias was reported for these parameters based on rank tests.However, no publication bias was reported following Egger's test.The physicochemical parameters were 6.49, 18.74 °D, 87.38%, 12.00%, 8.46%, 3.37%, 0.81%, 3.33%, and 4.46% for pH, dornic acidity, moisture, total solids (TS), non-fat solids (SNF), protein, ash, fat, and lactose, respectively. Meta-regression and subgroup analysis showed that the moderators employed (species, feeding management system, age, and lactation stage) affected some parameters , but no significant impact was reported according to parity of camels. Indeed, Milk from Camelus dromedarius was characterized by higher TS, and lower SNF, protein, ash, fat, and acidity. Milk from the extensive system was characterized by higher SNF and fat and lower density. Milk from younger camels (<6 years old) was characterized by higher TS, protein, fat, lactose, density, and lower ash content. Concerning the lactation stage, milk from the early lactation stage was characterized by higher TS, SNF, proteins, lactose, and lower fat.Milking time also affected the composition of camel milk, especially in the morning milking, with low pH, density, and ash content and higher acidity, protein, and lactose content.

Keywords - Camel Milk, Meta-Analysis, Chemical Composition