



## Study of Milk Characteristics in sheep

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### Abstract

In recent years, the linkages between diet and health have received increasing public attention, especially in popular media. Although dairy products, especially fluid milk, have historically enjoyed a widespread perception of being healthy food products. Considerable numbers of studies in Iraq were emphasized on milk quantity rather than quality. Therefore, 80 milk samples (30 ml) under aseptic condition (cleaning, disinfected of udder and deposit first milk drops) were randomly collected from local breed ewes that birth male and female lambs at four times (1, 2, 3 and 4 weeks respectively) during the lactation period. Fat, protein, solids non fat (SNF), milk density, lactose and freezing point were measured by using Ekomilk (total ultrasonic milk analyzer, USA). The results indicate that the sex of lamb had no effect on milk contents for ewes.

**Key words:** Sheep, Genetic, Milk quality, Ekomilk.

### دراسة صفات حليب الأغنام

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### الخلاصة:

لوحظ في السنوات الأخيرة، أن هنالك ارتباط وثيق بين الغذاء و الصحة حيث ازداد الاهتمام بهذا الموضوع بشكل عام، وبالخصوص ضمن وسائط الاعلام الشعبية. على الرغم من انتشار منتجات الحليب و بالأخص الحليب السائل في السابق على نطاق العالم كأحد المنتجات الغذائية الصحية. في العراق هنالك العديد من الدراسات التي تركزت على كمية إنتاج الحليب دون الاهتمام بنوعية المنتج. لذا تناول البحث جمع 80 عينة حليب بصورة عشوائية من النعاج المحلية الوالدة ذكور و إناث خلال فترة الرضاعة للأسبوع الأول، الثاني، الثالث، الرابع على التوالي (بمقدار 30 مل من كل حيوان) مع الأخذ بنظر الاعتبار الشروط الصحية عند اخذ العينات (تنظيف و تعقيم الضرع مع إزالة القطرات الأولى من الحليب). استخدم جهاز تحليل الحليب البيطري (الايكو) لفحص نسبة الدهن، البروتين، المواد الصلبة لا دهنية، الكثافة، اللاكتوز و درجة الانجماد. بينت النتائج عدم وجود تأثير لجنس المولود على مكونات حليب النعاج.

### Introduction

Sheep is an important part of the agribusiness economy of Iraq. Milk and other dairy foods provide rich dietary sources of protein, calcium, potassium,

magnesium, and vitamin A in human diets all over the world and are also good sources of carotenoids and tocopherols, significant provitamins and natural

antioxidants with several biological functions (Barłowska *et al.*, 2011; Chirlaque, 2011). Additionally, several bioactive compounds contained in milk have been found to have positive health effects (Mccance and Widdowsons, 2002; Voutzourakis *et al.*, 2014). Mostly, focused on bone health (Weinsier and Krumdieck, 2000), cardiovascular disease (Craddick *et al.*, 2003; Elwood *et al.*, 2005), certain cancers and control of body weight (Parikh and Yanovski, 2003; Barba *et al.*, 2005). Composition of milk and its yield are influenced by several factors including ewe breed, age, stage of lactation, lambing season, milking system and feeding (Bocquier and Caja, 1993; Čapistrák *et al.*, 2002). Most of the sheep milk produced throughout the world is transformed into cheese (Barłowska *et al.*, 2011). For this reason, when we refer to the quality of sheep milk we are concentrating mainly on its capability to be transformed into high quality dairy products, and to produce high yields of these products from each litter of milk. This is often described as the processing performance of the milk (Bencini and Pulina, 1997). Therefore, the aim of the present study was to evaluate the effect

sex of lamb on milk quality during lactation period for ewes.

#### Materials and Methods

The survey was conducted in Najaf province during period 4/11/2015 to 30/3/2016. A total 80 milk samples (30 ml) were randomly collected from ewes that birth male and female lambs under aseptic condition (cleaning, disinfected of udder and deposit first milk drops) during the first 4 weeks of lactation. Samples were placed in disposable plastic container and transport cooled then immediately storage in refrigerator (4°C) maximum 2 days until measured chemical analyses including fat, protein, solids non fat (SNF), lactose percentages, milk density g/cm<sup>3</sup> and freezing point °C by using Ekomilk (total ultrasonic milk analyzer, USA) at the laboratory of public health, College of Veterinary Medicine / University of Kufa. Data generated from study was carried out in a complete randomized design (Steel and Torrie, 1980). These data were subjected to ANOVA according to general linear model procedure of SAS (2001). The significant differences among means were determined by Duncan's multiple range tests with ( $p \leq 0.05$ ) level of significance. Figure (1, 2)



Milk sample



Ekomilk

**Results and Discussion**

The means of fat, protein, solids non fat (SNF), milk density, lactose and freezing point for ewes are presented in Table (1). All parameters at time 1, 2, 3 and 4 weeks during the lactation period showed no significant difference in ewes that birth male and female lambs. The present results agree with Ayadi *et al.*, (2014) found that sex of lambs did not produce any effects on milk composition of ewes.

**Table (1):Effect sex of lamb on milk compositions of ewes. Mean ± SE**

parameter	Fat		Protein		SNF		Density		Lactose		Freezing Point		Significance
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
type of birth lactation peroid													
1 <sup>st</sup> week	8.15 ±0.50	9.15 ±0.14	6.94 ±0.54	6.78 ±0.64	11.98 ±0.81	12.29 ±0.77	35.14 ±3.50	34.12 ±4.33	4.47 ±0.07	4.45 ±0.08	62.04 ±2.70	61.38 ±3.13	N.S
2 <sup>nd</sup> week	9.55 ±0.28	10.24 ±0.68	6.24 ±0.09	6.08 ±0.14	11.75 ± 0.03	11.45 ±0.17	34.10 ±0.37	32.30 ±1.32	4.45 ±0.04	4.48 ±0.13	50.18 ±1.05	60.26 ±1.39	N.S
3 <sup>rd</sup> week	8.70 ±0.86	10.46 ±0.80	6.53 ±0.25	6.41 ±0.37	12.02 ±0.32	11.80 ±0.43	35.90 ±1.85	33.56 ±1.78	4.50 ±0.03	4.45 ±0.03	62.96 ±1.89	59.88 ±0.99	N.S
4 <sup>th</sup> week	7.11 ±0.68	7.70 ±1.25	5.82 ±0.43	6.17 ±0.50	11.22 ±0.51	11.62 ±0.60	34.86 ±2.35	35.14 ±2.56	4.50 ±0.03	4.49 ±0.04	61.48 ±2.77	61.76 ±2.36	N.S

Mean ± SE represented 10 ewes.

N.S represented no significant differences between both sex in the same raw at a level (p≥ 0.05).

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