

(وَاللَّهُ جَعَلَ لَكُمْ مِّنْ بُيُوتِكُمْ سَكَنًا وَجَعَلَ لَكُمْ مِّنْ جُلُودِ الْأَنْعَامِ بُيُوتًا  
تَسْتَخِفُّونَهَا يَوْمَ ظَعْنِكُمْ وَيَوْمَ اقَامَتِكُمْ وَمِنْ أَصْوَابِهَا وَأَوْبَارِهَا وَأَشْعَارِهَا  
أَتَانًا وَمَتَاعًا إِلَى حِينٍ). النحل/80.

## **DEDICATION**

This work is dedicated to:

My parents

My wife and sons

My brothers and sisters

With love

## **ACKNOWLEDGEMENT**

I commend to express my full thanks to Allah firstly, who gave me the health and patience to conduct this study.

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## **ABSTRACT:**

This study was carried out on leather/shins at the three main locations of Sudan Desert Sheep: Western Sudan at Kordofan region (latitudes 9°:30' and 16°: 30' North and longitudes 24° and 32°: 25' East), Middle Sudan at Gazira state (latitudes 14°:30' and 33°: 30' North and longitudes 14° :50' and 33°: 50' East) and Eastern Sudan at Butana plain (Latitude 13°:40' and 17°:50' North and Longitude 32°:40' and 36° East) during the period 2012-2013. The main objective is to evaluate the effect of nutrition, seasonal changes and breed on skin\leather quality of Sudan desert sheep. One hundred and fifty (150) pieces of fresh skins from five (5) desert sheep breeds were chosen for the study purpose. For whole variations between the five breeds in two level of feeding (poor and rich pastures) at three seasons (summer, autumn and winter) factorial (3 factors) in RCBD (Randomize Complete Block Design) was used for data analysis. The results revealed that, Physical properties of Sudan desert sheep leather; Fresh skin weight, elongation, tensile strength, cracking, flexibility and tear load were significantly affected ( $P \geq 0.05$ ) by breed, nutrition level and season. Thickness findings were significantly affected ( $P \geq 0.05$ ) by nutrition level and season not by breed. Chemical characteristics; Moisture, fat and Tanning level (Chrome oxide content); findings were significantly affected ( $P \geq 0.05$ ) by breed, nutrition level and season. Ash content was not affected by breed and nutrition but slightly affected by season. Generally, high quality values were recorded at winter season for most of Sudan desert sheep skin\leather characteristics parameters. While fat and moisture contents high values were observed at autumn season. The present study concluded that all studied Sudan desert sheep breeds produced leathers with chemical and physical characteristics compatible with the quality standards required by the leather industry. The Gezira

and Butana breeds tended to produce slightly higher quality leather than the Kordofan breeds. The study recommended that, Sudan Desert sheep leather is stout and has enough strength and with optimum required thickness for making shoes upper, but for it is more elasticity (elongation); which is not desirable for this article; thus, it can be used for diabetic patients shoe's making. The improvements of pastures quality or sheep feeding quality generally, would lead to an improvement in most physical parameters of leather quality.

## الملخص:

أُجريت هذه الدراسة بالمناطق الثلاث الرئيسة للضأن الصحراوي السوداني: غرب السودان بمنطقة كردفان (بين دائرتي العرض  $9^{\circ}:30'$  و  $16^{\circ}:30'$  شمالاً وخطي الطول  $24^{\circ}$  و  $32^{\circ}:25'$  شرقاً)، ووسط السودان بولاية الجزيرة (بين دائرتي العرض  $14^{\circ}:30'$  و  $33^{\circ}:30'$  شمالاً وخطي الطول  $14^{\circ}:50'$  و  $33^{\circ}:50'$  شرقاً) ومنطقة شرق السودان بسهل البطانة (بين دائرتي العرض  $13^{\circ}:40'$  و  $17^{\circ}:50'$  شمالاً وخطي الطول  $32^{\circ}:40'$  و  $36^{\circ}$  شرقاً) خلال الفترة 2012-2013م. وكان الهدف الرئيس من الدراسة تقييم تأثير التغذية، السلالة والتغيرات الموسمية علي انتاج وجودة جلود الضأن الصحراوي السوداني. لغرض الدراسة تم اختيار (150) قطعة من جلود الضأن الصحراوي السوداني المسلوخة حديثاً من خمس سلالات. لمعرفة وتحديد الإختلافات في جودة الجلود للسلالات الخمس في مستويين من التغذية (مراعي فقيرة وغنية) في ثلاثة مواسم (الصيف والخريف والشتاء) تم استخدام تصميم القطاعات العشوائية الكاملة بثلاثة عوامل للتحليل الاحصائي للبيانات. أوضحت النتائج أن الخصائص الفيزيائية لجلود الضأن الصحراوي السوداني: وزن الجلد، الإستطالة، قوة الشد، قوة الثقب و التمزق؛ تأثرت معنوياً ( $p \leq 0.05$ ) بنوع السلالة، مستوي التغذية وإختلاف الموسم بينما سمك الجلد لم يسجل إختلافاً معنوياً بإختلاف السلالات ( $p \geq 0.05$ ) ولكن سُجلت إختلافات معنوية له عند مستويات التغذية و الموسم. أما الخصائص الكيميائية لجلود الضأن الصحراوي: نسبة الرطوبة، الدهن و مستوي الدباغة (أكسيد الكروم) فقد سجلت إختلافات معنوية لها ( $p \geq 0.05$ ) بإختلاف السلالات ومستويات التغذية و الموسم. أما نسبة الرماد (المعادن) لم تتأثر معنوياً ( $p \geq 0.05$ ) بإختلاف السلالة و مستويات التغذية ولكنها تأثرت قليلاً بإختلاف الموسم. بصورة عامة فإن أفضل قيم لمعظم مقاييس جودة جلود الضأن الصحراوي قد سُجلت في موسم الشتاء لجميع السلالات. بينما المستويات العالية لنسبة الدهن والرطوبة كانت في فصل الخريف. خلصت الدراسة الي أن كل سلالات الضأن الصحراوي السوداني تنتج جلوداً ذات خصائص فيزيائية وكيميائية

متوافقة مع معايير الجودة التي تتطلبها صناعة الجلود. سلالات الجزيرة والبطانة تميل لإنتاج جلود ذات مواصفات نوعية أعلى مقارنةً بسلالات كردفان. جلود الضأن الصحراوي السوداني ذات متانة وقوة وبمعدل سمك كافي لصناعة وجه الحذاء ولكن لأن معدل الاستطالة فيها أكثر من المرغوب فيه لهذه الصناعة، فإن الدراسة توصي بإمكانية استخدامه لصنع أحذية مرضي السكري. كذلك فإن تحسين نوعية المرعي و تغذية الأغنام بصورة عامة من شأنه أن يؤدي الي تحسين الصفات النوعية للجلد المنتج من الضأن الصحراوي السوداني.

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