

Moreover, Chevreul (1856) has reported the presence of traces of heavy metals such as copper and tin. Freney (1934) stated that the dried suint contained 30-40% inorganic matter while the organic portion reached 60-70%. He added that the nitrogen content varied from 1.9% to 3.8% with an average of 2.1% of the dried suint.

Materials and Methods

Dry ashing was used for determination of the percentage of organic matter, inorganic matter, silicates and carbonates recommended by A.O.A.C. (1955).

Sodium and Potassium were determined in a neutral extract of ash using Zeiss flame photometer. The quantities of these elements in solutions were determined by comparison with its calibration curve drawn by using known amounts of potassium and sodium chlorides in standard solutions.

The results were calculated as percentage of dry ash.

Calcium and magnesium were determined by titration with ethylenediaminetetraacetate (EDTA) according to the method of Diehl (1950).

Results and Discussion

The suint, as previously stated, is water soluble materials in the fleece after the extraction of the wax. Thus, wool can be considered as an organic-nitrogenous material suspended in semi-solid mixture of organic and inorganic salts partly dissolved in little water.

Therefore, the amount of these salts, which varies in the different fleeces, as well as its physical and chemical properties, could be considered among the factors which might affect the properties of the wool fibre.

The hydrogen ion concentration (pH) of the suint was found to be 8.4, 8.3 and 8.3 for the Merino, Ossimi and Rahmani breeds respectively. This denotes that wool in an alkaline medium which, according to the general properties of the protein molecule, will suffer a change in its chemical as well as its physical properties. As wool wax is susceptible to hydrolysis readily in this alkaline medium, it is therefore essential to study the effect of alkalinity on wool wax and wool fiber. A complete analysis of the suint is accomplished and the results are shown in Table 2.

The chemical constituents of the suint extracted from wool samples of different breeds in this study denoted that the suint of the Merino breed had the highest nitrogen, sulphur and organic matter percentages respectively followed by Ossimi and Rahmani breeds. This indicated that the fine wool differed in this respect from that of carpet wool. Moreover, suint-ash of Merino had the highest potassium, sodium, calcium and magnesium than the Ossimi and Rahmani breeds, while the reverse was the case with the anions, i.e. carbonates and silicates. In comparing these results with those of Chevreul (1856), Maumene and Rogelet (1865), Marker and Schulze (1901) and Freney (1934), it was found that the suint of Merino, Ossimi and Rahmani

had comparatively lower potassium and magnesium contents. These results should stimulate further research in connection with the nutrition and metabolism of these cations.

Moreover, the higher percentage of organic matter in the suint of the studied breeds than the percentages stated by Freney (1934) could be attributed to the hydrolysis of some wax under the influence of the alkaline medium of the suint and the high atmospheric temperature. This presumption was confirmed by the high content of free extracted fatty acids after acidification of the suint with hydrochloric acid. To support this suggestion, pure wax from the breeds under investigation were separately treated in a thermostat with a phosphate buffer solution of pH 8.3 at 37°C for three days. The results of this experiment showed that during this period nearly 25% of the wax was hydrolysed in the three breeds.

TABLE 2.- SOME CHEMICAL PROPERTIES OF SUINT

Component	Merino	Ossimi	Bahmani
<i>Fresh Suint</i>	Deeply dark brown, bituminous and hygroscopic		
Colour and appearance			
PH	8.4	8.3	8.3
Nitrogen %	3.24	2.15	2.34
Sulphur %	1.14	0.95	0.89
Organic matter %	48.75	45.49	44.55
Inorganic matter (ash) %	51.25	54.51	55.55
Free acids after acidification %	6.46	5.12	4.98
<i>Suint ash</i>			
Carbonate as -CO 3%	36.19	40.89	39.27
Silicate %	0.44	1.40	1.55
Potassium %	44.95	35.62	31.94
Sodium %	4.71	4.69	4.33
Calcium%	2.51	1.10	1.17
Magnesium %	0.83	0.56	0.55

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التركيب الكيميائي للمواد العرقية في الأغنام

البرن لطيف ، ممدوح عبد الوهاب شرف الدين ومحي الدين على عثمان
قسم الانتاج الحيوانى - كلية الزراعة - جامعة عين شمس

ظهر من البحث أن هناك اختلافات في التركيب الكيميائي للمواد العرقية
لأغنام المرينو (فليش) والأوسيمي والرحمانى مما يشير الى أن التركيب
الكيميائي للمادة العرقية يتبع نوع الصوف .

وقد تبين أن التأثير القلوى للمادة العرقية بجانب درجة حرارة الجو
المرتفعة ينتج عنه تحليل في مكونات شمع الصوف وتحلل جزئى للصوف
نفسه .

Studies on Zinc Retention in Sheep

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A study with Zinc was undertaken in relation to its content in common Egyptian feedstuffs and the balance trials with sheep to establish the possibilities of natural deficiency under normal feeding practices. Routes of excretion and retention per kilogram live weight (LW) of per unit metabolic body size (UMBS) of this mineral were determined. Fourteen balance trials were carried out using two castrated rams nearly equal in body weight (± 2 kg) in each trial to study fourteen common Egyptian feedstuffs. These tested feedstuffs consisted of four green forages, two dry roughages, three grains and five milling and factory by-products. Energy and protein requirements were calculated for each experimental animal and the rations were sufficient to maintain nitrogen equilibrium during the trial periods.

Among the fourteen tested feedstuffs, wheat and rice brans recorded the highest values for Zinc (76.4 and 71.9 ppm respectively). Wheat straw contained the lowest amount of Zinc (16.5 ppm). Zinc contents in the rest of the feedstuffs tested layed between these two limits. By comparing the Zinc contents of the tested feedstuffs with the reported requirements of farm animals, it was concluded that Zinc deficiency in ruminants with daily requirements of 8.6-60 ppm was unlikely to happen under normal feeding practices. Turkeys, on the other hand, with daily requirements up to 100 ppm and fed rations consisting mainly of grains and grains by-products could suffer from Zn deficiency. Zinc supplementation in poultry rations in the form of ingredients rich in Zinc should be considered.

Zinc balance was positive in all the tested feedstuffs. Faeces were shown to be the major pathway of Zinc excretion in sheep.

Modern work shows that Zinc is a dietary essential. The functions of Zinc in the body are poorly understood. It occurs in at least three enzymes: carbonic anhydrase, uricase, and kidney phosphatase; and is a part of crystalline insulin. It is widely distributed in the body and appears to be associated with proteins. Slight or moderate deficiencies of Zinc (Zn) in the ration would retard growth (Prasad *et al.*, 1963), lowered feed efficiency (Newland *et al.*, 1958, and Bieson *et al.*, 1962), caused abnormal bone formation (Supplee *et al.*, 1958, and Sullivan, 1931), and lowered fertility (Haaranen and Hyppols, 1931). Phytic acid in soybean meal apparently inactivated some of the Zn in the ration and made it unavailable (Smith *et al.*, 1961, and O'Dell and Savage, 1960). Edwards *et al.*, 1958, reported that Zn in Zinc sulfate, Zinc carbonate, Zinc oxide and Zinc metal was relatively available to young chicks.