Chemical Composition and Certification of Raw Skur

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ABSTRACT

Fibrils represent the first level of collagen structure visible from using scanning electron microscopy. Collagen fibril is stabilized by the formation of two types of chemical bonds: salt connections and covalent intermolecular connections. Salt connections are electrostatic bonds formed between acidic and basic functional groups on the side chains amino acids whose strength is maximized by alignment polar regions of fibrils.

Keywords: Leather, goatskin, pigskin, calfskin, sheepskin, macro- and microelements, inductively coupled plasma mass spectrometry

Skin is primarily made up of collagen, a protein that is very long compared to its cross section, which gives it strength and flexibility [1-3]. The skin is made up of these collagen-based animal skins, which have been chemically modified by tanning to make them impeccable, have desired operational and workers characteristics, as well as improve chemical and physical resistance with over time. To study the chemical composition of the skin, it is best to first understand the chemical composition of hides and skins and how tanning changes these structures. Collagen Molecules: Collagen is a protein molecule, built from consecutive chains of amino acids twisted and related in strong fibrous molecular structure [4-5]. The sequence in which amino acids are linked determines which protein is formed. Amino acid monomers that form the backbone of proteins collagen, consist of carboxyl and amino groups, as well as variable side chain from the central atom. These side chains that attach each individual amino acid has its unique chemical characteristics, can vary from simple hydrogen to quite large functional groups, which may be polar or non-polar, acidic or basic, aromatic or aliphatic [6-7]. non-polar side chains include only carbon and hydrogen atoms, however polar side chains contain oxygen and can often include carbonyl and hydroxyl groups, amino and amide groups or thiols (also called mercaptans, -SH). Various amino acids linked together by a covalent peptide bond formed by the reaction condensation between the carbonyl group of one amino acid and the amino group of another amino acid to form a polymer chain, called a polypeptide [8-9]. The backbone of proteins is the same, but they are different amino acid sequence. Collagen base, polypeptide chain, formed famous twenty various amino acids forming a chain with a length of about 1000 links. However, collagen is mainly from three amino acids: glycine (30 %), hydroxyproline (10 %) and proline (ten %) [10-11]. AT chains ordinary subsequence amino acids is glycene-X-proline or glycene-X-hydroxyproline, where X is a number of other commonly occurring

amino acids left overs [12-13]. Hydroxyproline, amino acid, present in all collagen molecules, is rare in almost all other protein structures, and its presence is used as an indicator collagen. Proline has a ring shape, and this is what makes the protein chain to twist, while the three protein polymers twist together in a triple helix, forming collagen. Spatially this the sequence forms a left helix [14-15]. Structure of procollagen formed by twisting three left-handed helical polypeptides into right-handed triple helix with three amino acids groups per turn. Chemical cross-links and hydrogen bonds between three chains additionally stabilized molecule collagen [16]. To do this, the three chains must be tightly packed and staggered so that the smaller side chains (glycine) could navigate in the center, while the larger side chains protruded out. Hence the terminal extension peptide groups (discovered at each end of the polypeptide chain) are removed by specific proteases to form non-helical telopeptide regions, thus completing the formation of the tropocollagen structure. This ultimate Quaternary structure stabilized multiple hydrogen bonds between the amino and carboxyl groups of neighboring spirals. Fibrils and fibrous structures: Collagen is multi-hierarchical structure, which further develops from collagen molecules, resulting in four levels of macromolecular structures: first, the molecules are packed together in an organized secondary helical structure called a fibril, then these fibrils further organize into larger bundles called bundles fibrils. then into bundles and finally into bundles of fibres. Fibrils represent the first level of collagen structure visible from using scanning electron microscopy [17]. Collagen fibril is stabilized by the formation of two types of chemical bonds: salt connections and covalent intermolecular connections. Salt connections are electrostatic bonds formed between acidic and basic functional groups on the side chains amino acids whose strength is maximized by alignment polar regions of fibrils.

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