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**Key words:** *spinal muscular atrophy, genotype-phenotype correlation, modifier gene, skewed X-inactivation.*

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## SPECIFIC SURFACTANT PROTEINS AS CLINICAL MARKERS FOR LUNG MATURITY IN RISK NEWBORNS

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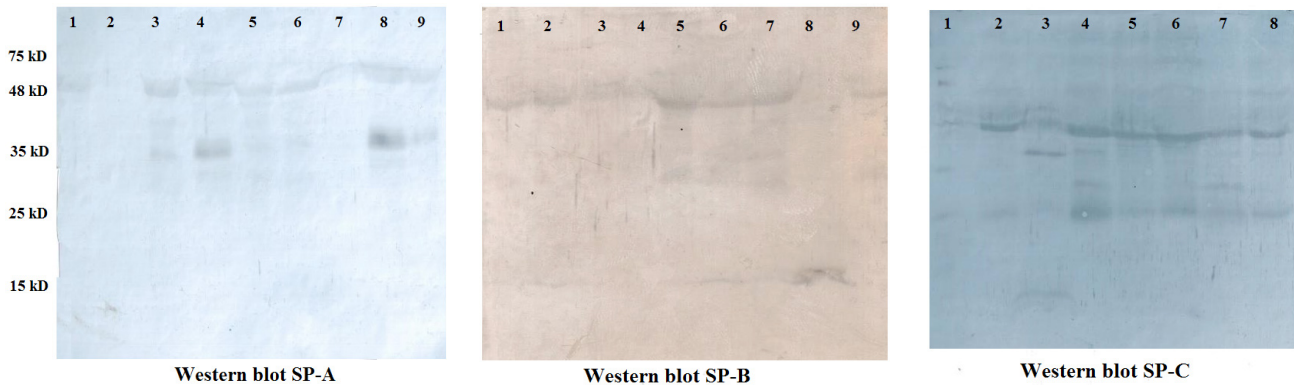
Alveolar surfactant (AS) provides stability during the dynamic process of inhalation/exhalation by maintaining low surface tension. AS consists mainly of phospholipids (80%), carbohydrates, and about 10% proteins, four of which, SP-A, SP-B, SP-C, and SP-D, are specific for AS. They play a crucial role in stabilization of alveoli at exhalation, as well as in the immune defense. The specific surfactant proteins are synthesized after 24<sup>th</sup> week of gestation. Therefore, in risk children born before 32<sup>nd</sup> week of gestation different respiratory pathologies, some of them of lethal outcome, can be observed. In the present study we tested the presence of specific surfactant proteins in gastric aspirates (GA) from newborns by Western blot with the aim to consider the advantage of GA as an adequate sample for assessment of surfactant maturity at birth.

**Materials and Methods.** In this study we analyzed 9 clinical samples GA, 2 of which are after application of betamethasone to the mothers, for detection of SP-A, SP-B, and SP-C. The separation of the proteins were carried out by 12% SDS-PAGE under reducing conditions followed by wet Western blotting. The blots were probed with specific polyclonal antibodies against human SP-A (28-36 kD), promature (40 kD) and mature SP-B (8 kD) and promature SP-C (21 kD) surfactant proteins in GA.

**Results.** The obtained results showed that GA from newborns with Neonatal Respiratory Distress Syndrome (NRDS) had the lowest concentrations of all analyzed surfactant proteins in contrast to GA from full term children (Fig. 1). In addition, the applied corticosteroid therapy did not show enhanced protein biosynthesis.

Fig. 1. Western blot SP-A: 1 - GA from infant with NRDS; 3, 4, 6, 8, 9 - GAs from full term infants; 5 - amniotic fluid of full term baby; 2, 7 - GAs after corticosteroid therapy; Western blot SP-B: 9 - GA from infant with NRDS; 1, 2, 6, 7 - GAs from full term infants; 5 - amniotic fluid of full term baby; 3, 8 - GAs after corticosteroid therapy; 4 - human serum albumin; Western blot SP-C: 2 - GA from infant with NRDS; 4, 5, 7, 8 - GAs from full

term infants; 6 - amniotic fluid of full term baby; 3 - GAs after corticosteroid therapy; 1 - human serum albumin.



**Conclusions:** Early diagnostics of lung maturity is crucial for the prompt therapy and for a chance for better quality of life for the newborns. Until now lung maturity is determined by invasive and traumatic analyses of amniotic fluid from mothers and tracheal aspirates from the newborns. Gastric aspirates collection is fast, simple, noninvasive procedure, realized in the first minutes after the delivery. Our results proved that GA can be used as adequate and reliable approach for assessment of surfactant maturity at birth.

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## EXPRESSION OF MATRIX METALLOPROTEINASES IN NORMAL ORAL MUCOSA

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Matrix metalloproteinases (MMPs) are  $Zn^{2+}$  dependent proteases produced by a variety of cell types. They take a fundamental role in tissue remodeling as well as tumors invasion and metastasis. Collectively they have a broad spectrum of proteolytic activity and are capable of degrading all components of the extracellular matrix. Metalloproteinases are synthesized by both epithelial and connective tissue cells of skin and oral mucosa, but the range and specificity of those produced by a specific cell type under particular conditions varies considerably in different pathological conditions [1]. Recent data from the scientific literature clearly demonstrates an important and critical role played by MMPs and their natural inhibitors in maintaining the normal physiological state of human body tissues as well as mediating various pathological processes, including the pathologies of mucosal lining [2].

Despite a significant number of studies on the expression of MMPs in various pathologies of the oral cavity, there are several studies on the expression of MMPs in the normal mucosa.

**Objective.** To evaluate MMP-7, -8, -13, -14 expression in the normal oral mucosa.

**Materials and Methods.** The normal mucosa was obtained from gingival mucosa during the dental implantation procedure. A biopsy of gingival material was analyzed from 30 patients with no visible signs of mucosal change in the material sampling area. Morphometric analysis of the MMPs expression was performed using Aperio Image Scope v9.0 software. The statistical data processing was carried out.

**Results.** The expression of the studied MMPs was absent or was represented by focal weak expression, the indices of which were statistically insignificant.