



## Anti-Phenylalanyl-tRNA synthetase autoantibodies (Zo)

**Synonyms** anti-Zo

**Indications**

- Dermatomyositis
- Polymyositis
- PM/DM-overlap syndromes with other connective tissue diseases
- Antisynthetase syndrome
- Interstitial lung disease
- Raynaud's phenomenon (active stage, before starting therapy)

**see also**

- [Autoantibodies in idiopathic inflammatory myopathies](#)

**Antigens**

The phenylalanyl-tRNA synthetase (EC 6.1.1.20;  $\alpha$ -chain: M<sub>r</sub> 57,6 kDa; chromosome 2p13.2;  $\beta$ -chain: M<sub>r</sub> 66,1 kDa; chromosome 2q36.1) belongs to the family of aminoacyl tRNA synthetases, which catalyze the ester bond of amino acids to their specific transport RNA (tRNA). The latter ones are engaged in the transport of amino acids for their assembly into the nascent polypeptide chain within the ribosomes.

**Autoantibodies**

Antibodies against phenylalanyl-tRNA synthetase (anti-Zo) so far have been reported once in a female patient suffering from respiratory complaints followed by proximal muscle weakness, Raynaud's phenomenon, arthralgia and necrotizing myopathy (Betteridge et al. 2007). The autoantibodies revealed by radioimmunoprecipitation assay showed a cytoplasmic pattern by indirect immunofluorescence on HEp-2 cells.

Suggestions with regard to the prevalence of this antibody, to its diagnostic sensitivity and specificity in myositis patients in general cannot be made at the moment. This antibody likely belongs to the group of the rare anti-tRNA-synthetases.

**Clinic**

Patients exhibiting antibodies against alanyl-tRNA may develop an antisynthetase syndrome, which presents themselves with varying symptoms of myositis, interstitial lung disease, arthritis, so called "mechanic hands" (rough, cracked skin at the tips and lateral aspects of the fingers forming irregular dirty-appearing fissures because of hyperkeratosis), Raynaud's phenomenon, sclerodactyly, calcinosis cutis and sicca-syndrome. The clinical manifestations of the antisynthetase syndromes may vary according to the antigen specificity of the respective anti-synthetase antibodies (Hamaguchi et al. 2013).

**Literature**

Betteridge Z, Gunawardena H, North J, Slinn J, McHugh N: Anti-synthetase syndrome: a new autoantibody to phenylalanyl transfer RNA synthetase (anti-Zo) associated with polymyositis and interstitial pneumonia. *Rheumatology, Oxford* (2007); 46(6): 1.005 - 1.008 (PMID: [17392287](#)).

Hamaguchi Y, Fujimoto M, Matsushita T, Kaji K, Komura K, Hasegawa M, Kodera M, Muroi E, Fujikawa K, Seishima M, Yamada H, Yamada R, Sato S, Takehara K, Kuwana M: Common and distinct clinical features in adult patients with anti-aminoacyl-tRNA synthetase antibodies: heterogeneity within the syndrome. *PLoS One* (2013); 8(4): e60442 (PMID: [23573256](#)).