Streptococcus pyogenes Antigens

Streptococcus (S.) pyogenes is a Gram-positive, round-shaped bacterium. Based on the classification system of beta-hemolytic streptococci established by Rebecca Lancefield (1933), *S. pyogenes* is categorized as the so-called group A *Streptococcus* (GAS). In general, *S. pyogenes* is considered one of the most common human pathogens that spreads via direct contact and aerosols. It is the causative agent of up to 10% and 30% of all cases of pharyngitis ("Strep Throat") in adults and children, respectively, as well as Scarlet Fever (Cunningham 2000; Ralph and Carapetis 2013). In addition, *S. pyogenes* infections of the skin and tissues are known that may lead to necrotizing fasciitis, sepsis or the toxic shock syndrome (Cunningham 2000; Steer *et al*. 2007; Ralph and Carapetis 2013). Following acute *S. pyogenes* infections, aseptic sequelae affecting different organ systems have been described. These include acute rheumatic fever, rheumatic heart disease, and acute post-streptococcal glomerulonephritis (Collin *et al.* 2003). The diagnosis of such secondary diseases relies on the determination of specific antibodies mainly (Batsford *et al.* 2002).

Arginine deiminase (arcA) hydrolyzes L-arginine into citrulline and ammonia. It is the first enzyme of the arginine deiminase system that catabolizes L-arginine to generate ATP when glucose is limited. Further, ammonia generated by this pathway is the primary defense mechanism against acidic pH *S. pyogenes* faces during the host's immune response (Fiedler *et al*. 2011; Hering *et al*. 2013). Arginine deiminase (arcA) is identical with streptococcal acid glycoprotein (SAGP), an inhibitor of peripheral blood mononuclear cell proliferation (Degnan *et al*. 1998; Degnan *et al*. 2000). Transketolase (tkt) catalyzes two reactions in the pentose phosphate pathway that lead to the conversion of ribulose-5-phosphate to glyceraldehyde-3-phosphate and fructose-6-phosphate. The cytolytic, extracellular protein streptolysin O (slo) belongs to the beta-barrel pore-forming exotoxin family called thiol-activated cholesterol-dependent cytolysins (CDCs) (Tweten 2005). Transketolase, arginine deiminase, and streptolysin O have been found to be immunoreactive with *S. pyogenes* patient sera (Cole *et al*. 2005, Camprubi *et al.* 2006).

Ordering Information		
44500 44501	*Streptococcus pyogenes* Arginine Deiminase (arcA)	0.1 mg 1.0 mg
44700 44701	*Streptococcus pyogenes* Streptolysin O (slo)	0.1 mg 1.0 mg
44600 44601	*Streptococcus pyogenes* Transketolase (tkt)	0.1 mg 1.0 mg

DIARECT's *S. pyogenes* Arginine Deiminase (arcA), Streptolysin O (slo), and Transketolase (tkt) are produced in *E. coli*.

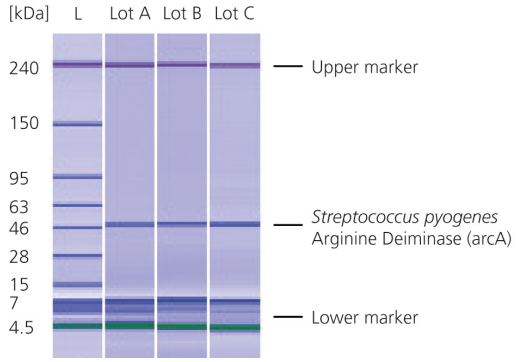

Figure 1: Electrophoretic analyses of three independent lots (A-C) of recombinant S. pyogenes Arginine Deiminase (arcA). The loading buffer added to the individual protein preparations contained an upper and lower marker. The molecular weight of the protein standards included in the size ladder (L) are indicated on the left.

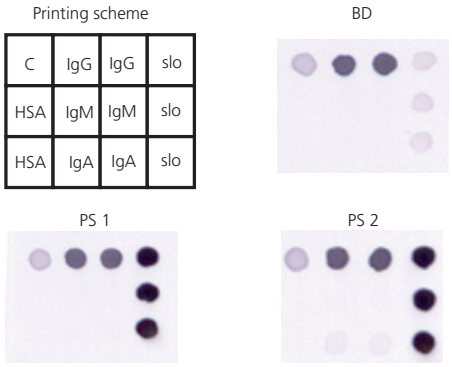

Figure 2: The presence of S. pyogenes antibodies in patient sera (PS 1-2) and blood donor samples (BD) was determined by spotting triplicates of DIARECT's recombinant antigen Streptolysin O (slo) on nitrocellulose membrane. Positive (anti-IgGMA (C), human IgG) and negative controls (HSA, human IgM and IgA) were spotted in the left and middle columns.

References:
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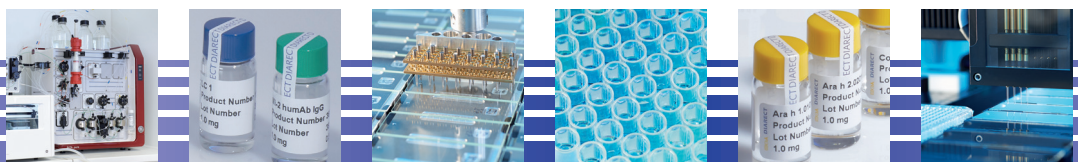

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