

Polysaccharide Bacterial Toxins as Anticancer Agents

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Busch, (1866, 1868), observed sarcoma patients with nosocomial erysipelas had spontaneous regression of tumors. Intentionally infection of sarcoma patients with erysipelas, showed regression of tumors in patients. Fehleisen, (1882) identified the erysipelas organism *Streptococcus erysipelatos* (*S. pyogenes*), repeated Busch's observations, deliberately infecting cancer patients with injections of *S. erysipelatos*, finding tumor reduction in 7 of 7 cases. Bruns, (1888), described 3 out of 5 permanent cures of malignancies with erysipelas infections. Roger, (1892) in France, enhanced virulence of erysipelas streptococcus by co-injection in rabbits with *Serratia marcescens*. W. B. Coley (1893, 1896, 1909, 1910) used heat killed cultures of both organisms commonly referred to as "Coley's Toxin" for his treatments. "Coley's Toxin" achieved clinical successes by Coley and others into the 1930's. In the 1980's Hellerqvist, Sundell, et al. isolated polysaccharide toxin from Group B *Streptococcus*, the causative agent of "Early Onset Disease" in humans. A potent 300kDa polysaccharide from GBS culture filtrate, was protein, LPS free containing lipid and phosphate. (Hellerqvist, 2002). GBS Toxin caused tumor specific capillary damage and tumor regression in rodents, and in a successful Phase I clinical trial in volunteer stage 4 humans (DeVore, et al. 1997), with 33% effectivity. A binding receptor 55kda protein (SP55) (Fu, et al., 2002) was found in humans encoded by the *SLC17A5* gene. This receptor was found to be expressed on all tested human tumors in capillary endothelium. A Phase II trial is planned, and a canine cancer trial is in progress.

Biography:

Roger A Laine was an Assistant and Associate Professor in University of Kentucky-Medical in Lexington. Currently he is a Professor and Chair of the Department of Biochemistry in Louisiana State University. He was Chief Scientist in Glycomed, Inc., San Francisco, and Founder of biotechnology companies Anomeric, Inc., TumorEnd, LLC (www.tumorend.com), Citrazone, LLC, Enzomeric, LLC, and partner in Glycon, LLC, and has authored 150 publications, and 28 patents.