

[Available Issues](#) | [Japanese](#)>> [Publisher Site](#)Author: [ADVANCED](#) | Volume Page
Keyword: | [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

PRINT ISSN : 0040-8891

The Bulletin of Tokyo Dental College

Vol. 50 (2009) , No. 1 :23-29

[\[PDF \(453K\)\]](#) [\[References\]](#)

Congo Red-binding Protein in Rough-phenotype *Aggregatibacter actinomycetemcomitans* is Amyloid-like Fiber

[Ryuta Kimizuka](#)¹⁾²⁾, [Tetsuo Kato](#)¹⁾²⁾, [Sadamitsu Hashimoto](#)²⁾³⁾, [Ayumi Yamanaka-Okada](#)¹⁾, [Katsuji Okuda](#)¹⁾ and [Kazuyuki Ishihara](#)¹⁾²⁾

1) Department of Microbiology, Tokyo Dental College

2) Oral Health Science Center, Tokyo Dental College

3) Department of Pathology, Tokyo Dental College

(Received January 16, 2009)

(Accepted February 20, 2009)

Abstract: *Aggregatibacter actinomycetemcomitans* is a pathogen associated with chronic and aggressive periodontitis and extra-oral infections. Fresh isolates of *A. actinomycetemcomitans* are fimbriated, forming small, rough-phenotype colonies on agar plates and also form biofilms. Recently, it has been reported that amyloid fibers are abundant in natural biofilms, and *Escherichia coli* and *Salmonella* spp. produce amyloid fibers that contribute to biofilm formation. This has yet to be reported, however, in *A. actinomycetemcomitans*. Amyloid binds the Congo red (CR) dye. In this study, therefore, we investigated amyloid formation in *A. actinomycetemcomitans* using a detection of CR-binding colonies on CR agar plates and CR-binding assay. All rough-phenotype strains formed dark red colonies and smooth-phenotype strains formed white or opaque red colonies on CR agar plates. Compared with smooth-phenotype strains, rough-phenotype strains showed higher CR-binding activity. CR-binding of rough-phenotype strain AKR was not affected by protease digestion or heating, whereas smooth-phenotype strain 29523 showed a marked reduction in CR-binding after both types of treatment. AKR showed amyloid-positive staining with CR to produce yellow green birefringence under polarized light, whereas 29523 showed amyloid-negative staining. These findings indicate that the CR-binding component of rough-phenotype *A. actinomycetemcomitans* is an amyloid-like fiber.

Key words: [Aggregatibacter actinomycetemcomitans](#), [Congo red-binding](#), [Amyloid](#)

To cite this article:

Ryuta Kimizuka, Tetsuo Kato, Sadamitsu Hashimoto, Ayumi Yamanaka-Okada, Katsuji Okuda and Kazuyuki Ishihara: "Congo Red-binding Protein in Rough-phenotype *Aggregatibacter actinomycetemcomitans* is Amyloid-like Fiber". The Bulletin of Tokyo Dental College, Vol. **50**: 23-29 (2009) .

doi:10.2209/tdcpublication.50.23

JOI JST.JSTAGE/tdcpublication/50.23

Copyright (c) 2009 by Tokyo Dental College, Japan



[Japan Science and Technology Information Aggregator, Electronic](#)

