Letter to the Editor

**Reply to commentary by A. Fisette on the article
“Relationship between the acylation-stimulating protein
gene and coronary heart disease in the Xinjiang Uygur
and Han populations of China” published in Genetics
and Molecular Research 13 (2): 2638-2644 (2014) to the
letter published in Genet. Mol. Res. 13 (4): 9134-9135**

Y. Chen and Y.T. Ma

Department of Cardiology,
The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China

Corresponding author: Y.T. Ma
E-mail: myt-xj@163.com / myt_xj@sina.com

Genet. Mol. Res. 13 (4): 9136-9137 (2014)
Received June 20, 2014
Accepted July 1, 2014
Published November 3, 2014
DOI <http://dx.doi.org/10.4238/2014.November.3.2>

Dear Editor,

In answer to the questioning of the terminology we used in our manuscript (Chen et al., 2014), ASP is a 76-amino acid (8932 Da) fragment, which is identical to C3adesArg, a cleavage product of complement C3. Cleavage of complement C3 is mediated via the alternate complement pathway by the interaction of C3, factor B and adipsin (Factor D, a serine protease enzyme), which generates C3a. Rapid cleavage of the C terminal arginine of C3a by carboxypeptidase N generates ASP (Hugli, 1990). Activation of this pathway is initiated through the C3b component of C3 (ASP precursor) associated with the plasma membrane. In the presence of Mg^{2+} , Factor B binds to the activated C3b to form a C3bB complex. This, in turn, induces a conformational change of Factor B, permitting proteolytic cleavage by adipsin. The action of adipsin on C3b-bound Factor B generates a C3bBb fragment (a C3 convertase),

which in turn cleaves complement C3 into C3b and C3a (Schreiber and Muller-Eberhard, 1978; Lesavre et al., 1979). The C3b component can then be recycled back to start the process anew. The carboxy-terminal arginine of C3a is rapidly cleaved in plasma by carboxypeptidase N to form C3adesArg (ASP) (Campbell et al., 2002).

ASP Generation Genes, as previously published (Cianflone et al., 1989; Sniderman and Cianflone, 1994), are the key genes involved in the conversion of complement C3 to its ASP form (aka C3adesArg); C3, factor B and adipsin are produced by adipocytes. These three genes also correlated closely with other genes and have been called the “ASP triad” (MacLaren et al., 2010).

Based on previous studies, we chose the C3-related SNP to investigate the relationship between this C3-related gene and coronary heart disease. In previous studies, the C3 gene was also described as an ASP-related gene, an ASP generation gene and an ASP gene, while in our paper we used the term ASP gene (MacLaren et al., 2010; Farahbakhsh-Farsi et al., 2014). It may not be an accurate descriptive name, but it is not unreasonable to use such a designation, as there is no unique definition of these genes, which are related to ASP generation.

Nevertheless, we appreciate the careful reading of our manuscript. If there are any other questions or suggestions, with readers are welcome to contact us through the e-mail provided in our published paper.

REFERENCES

- Campbell WD, Lazoura E, Okada N and Okada H (2002). Inactivation of C3a and C5a octapeptides by carboxypeptidase R and carboxypeptidase N. *Microbiol. Immunol.* 46: 131-134.
- Chen Y, Ma YT, Yang SJ, Yang YN, et al. (2014). Relationship between the acylation-stimulating protein gene and coronary heart disease in the Xinjiang Uygur and Han populations of China. *Genet. Mol. Res.* 13: 2638-2644.
- Cianflone KM, Sniderman AD, Walsh MJ, Vu HT, et al. (1989). Purification and characterization of acylation stimulating protein. *J. Biol. Chem.* 264: 426-430.
- Farahbakhsh-Farsi P, Djalali M, Koohdani F, Saboor-Yaraghi AA, et al. (2014). Effect of omega-3 supplementation versus placebo on acylation stimulating protein receptor gene expression in type 2 diabetics. *J. Diabetes Metab. Disord.* 13: 1.
- Hugli TE (1990). Structure and function of C3a anaphylatoxin. *Curr. Top. Microbiol. Immunol.* 153: 181-208.
- Lesavre PH, Hugli TE, Esser AF and Muller-Eberhard HJ (1979). The alternative pathway C3/C5 convertase: chemical basis of factor B activation. *J. Immunol.* 123: 529-534.
- MacLaren RE, Cui W, Lu H, Simard S, et al. (2010). Association of adipocyte genes with ASP expression: a microarray analysis of subcutaneous and omental adipose tissue in morbidly obese subjects. *BMC Med. Genomics* 3: 3.
- Schreiber RD and Muller-Eberhard HJ (1978). Assembly of the cytolytic alternative pathway of complement from 11 isolated plasma proteins. *J. Exp. Med.* 148: 1722-1727.
- Sniderman AD and Cianflone K (1994). The adipsin-ASP pathway and regulation of adipocyte function. *Ann. Med.* 26: 388-393.