Electrophoresis of Egg White Proteins of the Japanese and the Formosan Native Fowls.

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G_3 ovoglobulins of the egg white from the domestic fowl are controlled by the G_3 locus. Initial reports indicated that this locus had two co-dominant allelents G_3^A and $G_3^{B1,2}$. Subsequent works revealed other variants, and at present as many as ten different variants can be distinguished by starch gel electrophoresis³⁾.

Although there is no obvious relationship between the egg white polymorphisms and any economical traits, the globulins are of interest phylogenetically⁴⁾.

This report describes a new variant of G_3 ovoglobulin and other proteins of the egg white from the five breeds of the chicken.

Eggs of Formosan native fowls were collected from Holi, Taichung and Chung-Li, TAOUYUAN, Taiwan. The egg from four breeds of Japanese fowl were also examined. For the comparison, few eggs from White Leghorn were collected. Thin egg white was subjected to starch gel electrophoresis. Ferguson and Wallace's buffer system⁵⁾ was employed and the gel was stained in Amido Black 10 B.

A new variant (G_3F) of G_3 ovoglobulin was observed in one Shamo and one Formosan native fowl (Fig. 1.). This variant had faster electrophoretic mobility than G_3A . These two birds showed phenotype G_3AF . Three G_3 variants that have faster mobilities than G_3A have been reported, namely G_3A^F ,³⁾ G_3J ⁶⁾ and G_3M ⁷⁾. Judging from the mobility, the variant G_3F may be correspond to G_3J .

Fig. 1. Starch gel electrophoretic separation of egg white protein.

The J variant has been found first in the Red Jungle Fowl⁶⁾ and then in the Yokohama (Japanese Long Tailed Fowl) and the Japanese Bantam⁸⁾. In addition to above findings, BAKER et al.⁹⁾ reported the presence of G_3J in some Indian village fowl and they

Table 1. Phenotypes of egg white proteins in various of the chicken.

Breed	No. hens	G ₂			G ₃				Tf		
		A	AB	B	AF	A	AB	B	B	BC	C
Formosan native fowl											
1. Tachung	3		3		1	2			3		
2. TAoyUAN	1		1			1				1	
Shamo (Japanese Game)	1		1		1				1		
Chabo (Japanese Bantan)	11		1	10		9	2		11		
Gifu-Jitori (Japanese native fowl)	24	6	14	4			8	16	24		
Silkie	8	1	5	2		8			6	2	

explained that the presence of G₃J in the these breeds was suggestive of an Asiatic origin for this variant. The present results may support their explanation, but it is desirable to compare the G₃F with the previously established variants.

The G₃^B allele seems to be associated with Asiatic ancestry⁴⁾. High frequency of G₃^B was observed only in the Gifu-Jitori (Japanese native fowl). G₃^A were predominant in other four breeds. Five breeds examined were monomorphic for Ov^A and G₁^F. Two Silkies and one Formosan native fowl had two protein bands in the transferrin rigeon.

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