Short Paper

Fluorometry of the Setting of Fish Flesh Sol-Supplement*1

On heating actomyosin solution at 40°C for 10 min, the easily setting species except sardine increased more intensively than the hardly setting ones in the emission intensity measured at 470 nm in the presence of 8-anilino-1-naphthalene sulfonate (ANS).¹⁾ For myosin, however, the former species did not always show more remarkable increase in the intensity than the latter ones, and, only in a series of the latter species, a correlation was observed between the ease-to set and the increment of the emission intensity. The reason, why the former species did not increase so intensively in the intensity, was interpreted as the scattering of the excitation light (365 nm) by the turbidity resulting from myosin aggregation.

In this study, it was investigated whether the former species increased in the emission intensity more intensively than the latter ones if the intensity was measured before the development of a large quantity of the turbidity. The preparation of myosin and all the measurements were carried out as reported previously,¹⁾ except that the heating time was shortened and the emission intensity was measured in a cold room at 8°C to avoid an excessive progress of myosin aggregation.

In Fig. 1, the emission intensity per unit amount of myosin (mg/ml) vs. myosin concentration is compared between the easily setting species (above column) and the hardly setting ones (below column). At any concentration, the intensity of the former species was higher than that of the latter species before heating*² and increased more intensively with the progress of heating, though the increase was suppressed after about 4 min. Such the increasing tendencies are approximately agreement with those reported for actomyosin. There-

fore, in the previous results of myosin from the easily setting species and actomyosin from sardine whose flesh sol is known to aggregate too easily,²⁾ the suppression of the increase in the emission intensity can be understood to be, as expected, due to the scattering of the excitation light. The results obtained here suggest that, before heating, the hydrophobic interactions existing on the surface of myosin molecule-presumably, relating to the intramolecular interactions, - are more abundant in the easily setting species than in the hardly setting ones, and that the hydrophobic interactions increase more intensively on heating-presumably, relating to the formation of the intermolecular interactions. Thus, the participation of the hydrophobic interactions in the setting of fish flesh sol was confirmed not only for actomyosin but also for myosin which showed the clear species-specificity on the setting like the case with actomyosin*⁴. Furthermore, there appeared a new possibility that a part of the intramolecular interactions turned to the intermolecular hydrophobic ones with the progress of heating, because the intact myosin and also the actomyosin from the easily setting species showed higher emission intensity.

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Fig. 1. Emission intensity of various myosins measured at 470 nm in the presence of ANS (exciting wavelength: 365 nm).

Before heating ○—○, after heating at 40°C for 2 min ●—●, for 4 min ■—■, and for 6 min ▲—▲.

1) *Sardinops melanosticta*, 2) *Trachurus japonicus*, 3) *Seriola quinqueradiata*, 4) *Kareius bicoloratus*, 5) *Pneumatophorus japonicus*, 6) *Coryphaena hippurus*, 7) *Prionace glauca*.

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*3 This tendency was observed also for actomyosin, though not referred there.¹⁾

*4 Presented by F. NISHIOKA, R. MACHIDA, and Y. SHIMIZU at the Ann. Meet. of Japan. Soc. Sci. Fish., Tokyo, in Apr., 1978.