



Mass transfer during dehydration of flounder fillet with dried kelp

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Name: Yuri Kominami**Organization:** The University of Tokyo**Authors:** Yuri Kominami¹, Kaito Takase¹, Tatsuya Hayashi², Hideki Ushio¹, Aberham Hailu Feyissa³¹The University of Tokyo²Yamato University³Technical University of Denmark**Email:** akomi@g.ecc.u-tokyo.ac.jp**Abstract**

Sandwiching a raw fish fillet between dried kelp has been traditionally developed as a sashimi preservation method in Japan. The fish fillet is mildly dehydrated, and gains taste/odor components delivered from the kelp. Thus, the mild dehydration technique with dried kelp can not only preserve a raw fish fillet but also improve its sensory properties. The changes in the texture of the fillet greatly depend on the dehydration process. In this study, the diffusion of water from a raw flounder fillet to dried kelp was investigated. Raw flounder fillets were skinned and cut into rectangles. To consider unidirectional diffusion, the dried kelp was only placed on the skin side of the fillet (not sandwiched). The time-course changes in moisture content of the flounder fillet were experimentally determined. The dehydration efficiency of the flounder fillet differed depending on the distance from the kelp; it was higher with closer to the kelp. The results indicate that the dehydration front moves slowly enough to limit dehydration in the core of the fillet. A denatured protein layer, generated through a rapid dehydration, can be a barrier to water diffusion across the dehydration front. The obtained results provide a valuable understanding of dehydration dynamics and its impact on protein denaturation, thereby fillet quality. The enhancement of protein denaturation by salt diffusion from the kelp should also be investigated in future work.