日本電気泳動学会 電子メール通信 No. 199

2023 年 12 月 26 日

【お知らせ__Journal of Electrophoresis Vo. 67 (2023) No.1　J-STAGE からの公開】

日本電気泳動学会会員の皆様

2023 年 12 月 26 日、Journal of Electrophoresis Vo. 67 (2023) No.1 (J-STAGE 電子版)に、以下の論文が掲載されましたのでお知らせ致します。
（https://www.jstage.jst.go.jp/browse/jelectroph）

J Electrophoresis. 2023; 67:1–7.

Full Paper

Title: Applicability of esterase activity change analysis using a combined method of non-denaturing two-dimensional electrophoresis and reverse staining

Authors: Maho Inoue, Youji Shimazaki

Abstract: By using a combinational method of non-denaturing two-dimensional electrophoresis (2DE) and reverse staining, various water-soluble esterases in the mouse liver were separated and detected. When the effects of Zn^{2+} and imidazole were investigated, Zn^{2+} increased esterase activity while imidazole had no effect on esterase activity. After separation using non-denaturing 2DE and reverse staining, esterase activity on the 2DE gel was also increased by Zn^{2+}, whereas there was no effect on esterase activity by the treatment of imidazole. In addition, the activity of various esterases was inhibited by 1 mM Fe^{2+} using esterase activity staining after the combination of non-denaturing 2DE and reverse staining. Furthermore, by 1 mM Fe^{2+}, the activities of various esterases separated and detected using the combined method were found to be suppressed to 34–42% of that in the absence of Fe^{2+} after analyzing substrate changes using fluorometry. Based on the above, the combination of non-denaturing 2DE and reverse staining is applicable to search for substances that inhibit various esterase activities.

J Electrophoresis. 2023; 67:9–13.

Short communication

Title: Aggregate formation analysis of bean proteins with various divalent metal cations by SDS-PAGE using low concentration of SDS extraction medium

Authors: Ryota Kiriyama, Masamichi Oh-Ishi

Abstract: The amount of metal ions that exist in living organisms is almost fixed for each organism. In the case of soybeans, divalent metal ions such as Mg^{2+} and Ca^{2+} exist in hundreds of mg per 100 g of soybean (abundant metals), while divalent metal ions such as Fe^{2+}, Mn^{2+}, and Cu^{2+} exist in only a few mg per 100 g of soybean (trace metals). To investigate the difference in effectiveness in aggregating proteins between the two groups of metal ions, a comparative analysis was performed using a combination method of low-concentration (0.1%) SDS extraction, aggregates sedimentation with low-speed centrifugation, and SDS-PAGE. When the amount of ferrous sulfate ($FeSO_4$) added to soybean homogenate exceeded 0.3 mM, the most bands on SDS-PAGE suddenly became fainter. On the other hand, with calcium chloride ($CaCl_2$), these bands became a little thinner when it exceeded 0.5 mM, but even if the amount of $CaCl_2$ added was increased, they became thinner gradually and did not become thinner suddenly. Furthermore, it is noteworthy that when 0.1 mM copper sulfate ($CuSO_4$) was added to soybean homogenate, the most bands became fainter but only a band of unidentified protein with 21 kDa increased. Based on the above experiments, it is possible to investigate the formation of aggregates between various metal ions and soybean proteins using low-concentration SDS extracts, which is a new method for investigating proteins that interact with metal ions.

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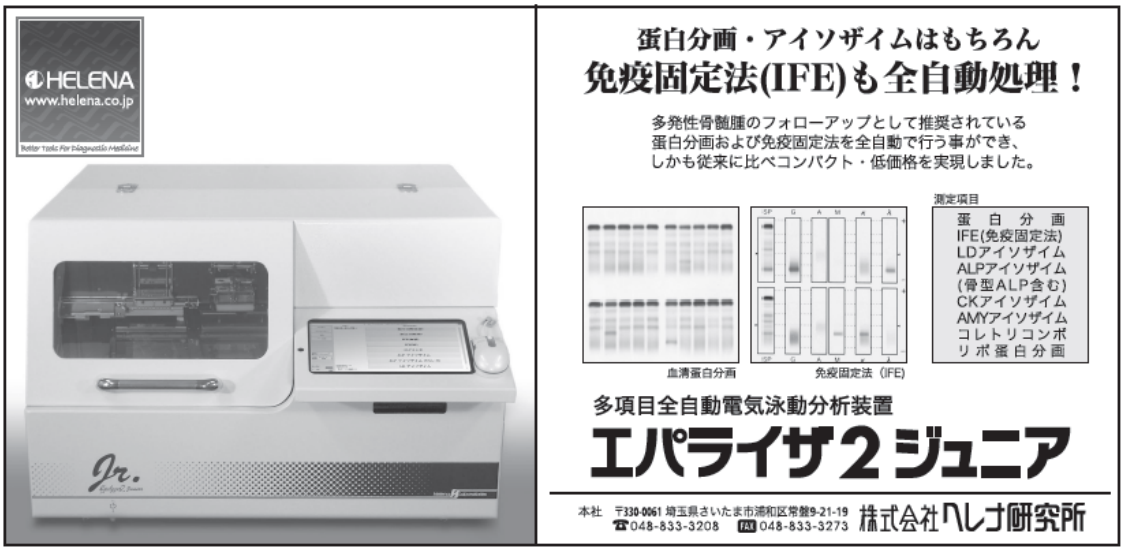

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