Enhancing Chemiluminescence Signal with Powerful Capturing Software

INTRODUCTION

While detecting with very weak signal samples, camera sensitivity is the first priority for customer to evaluate the capturing ability of image system. For real applications, however, only coupled with powerful capturing software that have a good camera which can perform with extra-excellent detection ability. Specifically, when focusing on detecting chemiluminescence samples, Magic Chemi provides various enhancing functions including Binning, Batch Capture, and DynaView functions. **Binning function** integrates signals from multi-pixels to enhance the intensity of tiny signal. **Batch Capture** takes a series of pictures with increasing exposure times for users to choose images with adequate intensity. **DynaView** function is designed for detection of the weakest signal by accumulating signals from initial to each time point. In the following article will elucidate Binning, Batch Capture, and DynaView functions of Magic Chemi software with simple chemiluminescence samples through KETA ML system.

MATERIALS

- Goat-anti-mouse-IgG-HRP (Santa Cruz)
- Chemiluminescent: ECL Enhanced Chemiluminescence reagent (Millipore)
- NC membrane (Millipore)
- TBST buffer and PBS buffer
- KETA ML imaging system (Wealtec)

PROCEDURES

- Goat-anti-mouse-IgG-HRP antibody was diluted to proper concentration with PBS.

Spot	1	2	3	4
Protein amount (pg/μl)	66.67	22.22	7.40	2.47

- NC membranes were moistened with TBST buffer and then air-dried for 10 minutes.

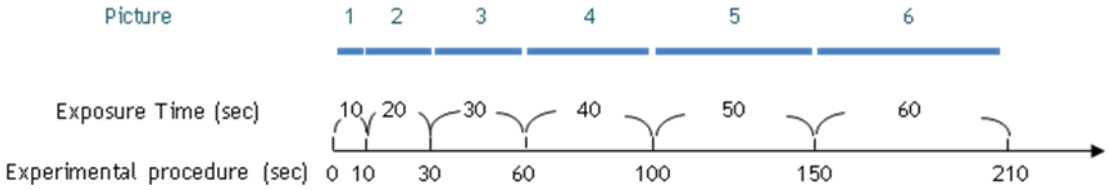
- Diluted antibody (1 µL) was blotted onto NC membrane and then air-dried for 10 minutes.
- Membranes were added with ECL Enhanced Chemiluminescence reagent.
- Image was taken by KETA ML imaging system.
- Magic Chemi capturing modes setting:

(A) Batch Capture Setting:

Number of capture: 25

Start Int. Time (sec): 10

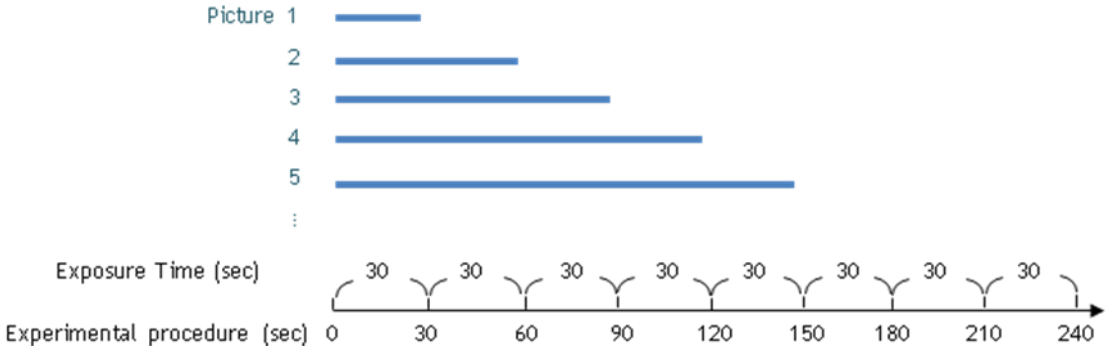
Inc. Time Interval (sec): 10



(B) DynaView Setting:

Repeat Exposure Number: 99

Exposure Time (sec): 30



RESULT

(A)

Binning function	OFF	2 × 2	4 × 4
Image			

(B)

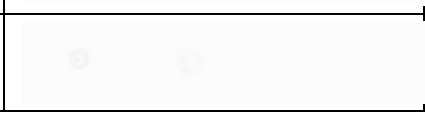
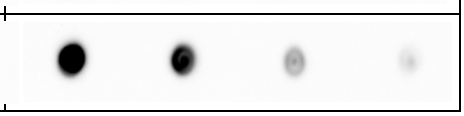
Exposure Time (sec)	Batch Capture	DynaView
30		
60		
90		
120		
150		
180		
210		
240		

Figure 1. *Chemiluminescence signal detection in KETA ML imaging system with different capture condition. (A) Turn on Binning function for 5 seconds exposure. (B) Batch Capture and DynaView function.*

DISCUSSION

Magic Chemi software provides various strategies for detecting of chemiluminescence signals: As in figure 1(A), with turning on the Binning function, signals from weak emission samples are largely enhanced. While Batch Capture applied for the uncertain intensity samples, it provides customers with the best intensity pictures which can be chosen from a batch of pictures with increasing exposure time. Nevertheless, while targeting on study of the easily decay chemiluminescent samples, Batch Capture also can detects the degradation status of samples during image capturing (as in *fig*. 1(B)). DynaView function, which is designed for the weakest sample by accumulating signals from the initial capture to each time point. Even detect with the most easily decomposed tiny illuminations sample, signal can also be easily detected by using DynaView function. Results with the same exposure time by using of Batch Capture and DynaView mode are as showing in *fig*. 1(B).

When commonly recognized as high end 2nd stage cooled CCD completed with Magic Chemi software, detection ability can upraised to an extra high performance level. And also with the different capturing modes can let our customers apply this software on wider research aspects.

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