Tips and tricks of the trade

Soy Milk Blocking

Soy milk is quite popular as a source of protein and calcium in lactose-free diets. But have you ever considered using it in the laboratory for Western blot blocking?

Lab Hint

Blocking the blotting membrane before antibody incubation is crucial in Western blotting to eliminate unspecific binding sites. Non-fat dry milk, bovine serum albumin and casein are very popular, non-commercial blocking solutions. However, blocking efficiency of these homemade solutions depends on the antibodies used and proteins analysed.

Optimised commercial blocking agents containing special protein-based formulations may perform slightly better in this respect; however, they are much more expensive. An interesting alternative to both homemade and commercial blocking solutions is available in every grocery store around the corner: soy milk.

Mark Milanick from the University of Missouri, whilst thinking of an inexpensive and effective blocking solution for his students laboratory exercises, came up with the idea of blocking Western blot membranes with soy milk (Milanick *et al.*, *Bioscene*, 2009, 35, 49-0; Galva *et al.*, *Anal. Biochem.*, 2012, 426, 22-3).

Soy milk is an inexpensive alternative to commercial blocking solutions.

To demonstrate soy milk's blocking efficiency, his group transferred purified Na,K-ATPase, v5-tagged-Na,K,-ATPase and crude nuclear extracts from HEK 293 cells to a PVDF-membrane. The membrane was blocked with either non-fat soy milk, whole soy milk or non-fat dry milk suspended in PBS or a commercial blocking reagent.

The results of their blocking agent study are pretty clear: soy milk outperformed the other blocking solutions, especially when short exposure times were applied during terminal chemiluminescent detection of antibody binding. Moreover, it provided the best results for three sets of antibodies used for the experiments (anti-Na,K-ATPase α and β subunits; anti-v5).

Given the low price of soy milk and the fact that its blocking efficiency is as good as or even better than commercial reagents, it seems really worth a try. If it doesn't hold its promise, however, you may invite your labmates to a soy milk shake (which probably tastes better with whole fat soy milk).

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Do you have any useful tips?
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