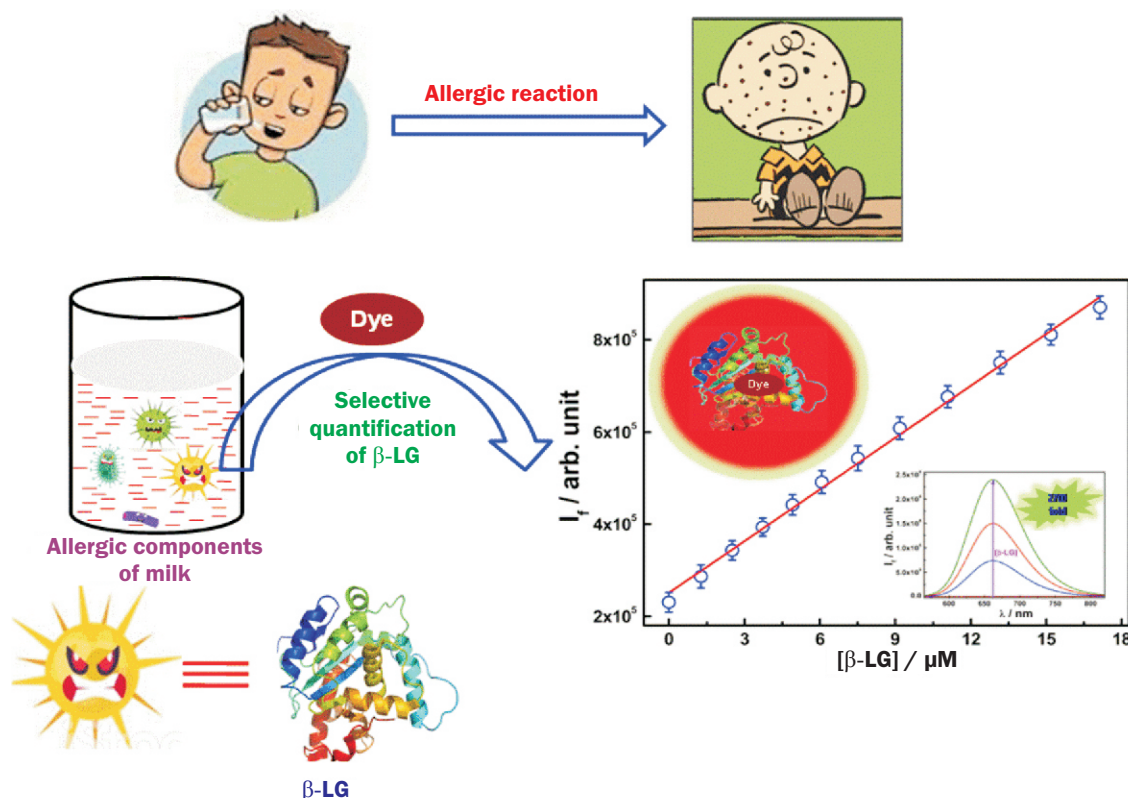


# An Exceptionally Intense Turn-on Fluorescence Sensor in the Far-red Region for Common Milk Allergen $\beta$ -lactoglobulin



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The applicability of fluorogenic probe for quantification of  $\beta$ -LG in real milk samples has been validated.

Common milk allergens such as,  $\beta$ -lactoglobulin ( $\beta$ -LG), pose a major health concern for public, particularly in children. Thus, sensitive and selective methods for detection of common milk allergens are highly warranted. To the best of our knowledge, detection and quantification of  $\beta$ -lactoglobulin, a common milk allergen, by fluorescence based technique has not been reported till date. Herein, we present the first ever fluorescence based report for the selective detection and quantification of milk allergen,  $\beta$ -LG, using LDS-798 as a fluorogenic probe, which registers an exceptionally large fluorescence enhancement of  $\sim 2900$  fold in the far-red region upon binding with  $\beta$ -LG with LOD of  $\sim 6.3 (\pm 0.3)$  nM for  $\beta$ -LG in aqueous buffer solution and  $0.67 (\pm 0.04)$   $\mu\text{M}$  in 5% bovine milk matrix respectively (Goutam Chakraborty *et. al.*, 'An exceptionally intense turn-on fluorescence sensor in the far-red region for common milk allergen  $\beta$ -lactoglobulin', *Sens. Actuators, B* **327**, 128864). High sensitivity and selectivity, fast response, high repeatability and reproducibility, easy operation, along with emission in the technologically advantageous far-red region make the fluorometric quantification of  $\beta$ -LG, using LDS-798 as a fluorogenic probe, far more advantageous than the other techniques, generally used for  $\beta$ -LG quantification. Importantly, we have demonstrated the applicability of this probe for quantification of  $\beta$ -LG in real milk samples which has been validated by an established method.

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