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Effective pre-treatment technique based on immune-magnetic separation for rapid detection of trace levels of *Salmonella* in milk

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1 **Effective pre-treatment technique based on immune-magnetic separation for**  
2 **rapid detection of trace levels of *Salmonella* in milk**

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15 **Abstract**

16 A rapid and effective pre-treatment method based on immune-magnetic  
17 separation (IMS) with enrichment culture was developed to rapidly detect trace levels  
18 of *Salmonella*. Immune-magnetic beads were prepared and their capture efficiency  
19 exceeded 90% with less than 10<sup>6</sup> CFU/mL of *Salmonella*. IMS was performed on  
20 25-mL samples without pre-enrichment; instead, the trapped target pathogens were  
21 cultured in buffered peptone water for a short time. This pre-treatment was  
22 significantly shorter and simpler: the 5 h processing time included IMS for 1 h and

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