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Development of vortex-assisted ionic liquid-dispersive microextraction methodology for vanillin monitoring in food products using ultraviolet-visible spectrophotometry

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## ACCEPTED MANUSCRIPT

1	Development of vortex-assisted ionic liquid-dispersive microextraction methodology for
2	vanillin monitoring in food products using ultraviolet-visible spectrophotometry
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## 10 Abstract

The research deals with development of a new methodology for preconcentration and 11 determination of vanillin in food products using vortex-assisted ionic liquid-dispersive 12 microextraction (VAILDME) followed by ultraviolet-visible (UV-vis) spectrophotometry. The 13 hydrophobic vanillin complex was extracted directly from the foods into the fine droplets of 14 ionic liquid (IL) in presence of Cu(II) at pH 8.0. By the experimental studies, the optimum 15 conditions were determined as follows; pH 8.0, 0.5 mmol  $L^{-1}$  of Cu(II) solution, 250 µL of the 16 IL, 100 µL of ethanol, 5 min of vortexing time. Under the optimal conditions, the method 17 showed good linearity in the range of 0.5-300  $\mu$ g L<sup>-1</sup> with a limit of detection 0.15  $\mu$ g L<sup>-1</sup>. The 18 reliability of the method was evaluated in terms of repeatability (as RSD%,, n: 10) and 19 reproducibility (as RSD%, n:  $3\times5$ ) after spiking with 10, 50 and 100 µg L<sup>-1</sup>, and the precision 20 levels were 3.7% and 4.1%, respectively. The accuracy of the method was assessed by 21 recovery experiments, and the recoveries for spiked samples were quantitative in range of 22 92.1-103.0%. After validation studies, the method was successfully applied to the 23 determination of vanillin in food products with satisfactory results. 24

25 Keywords: Spectrophotometry, Ionic Liquid, Vanillin, Foods, Microextraction

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