E2-40 Some problems related to the quantification of iron in iron-fortified wheat flour

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Wheat flour will be fortified with iron at National Level, as a measure to combat iron-deficiency anaemia prevalent among the population. This study describes

some problems related to the quantification of iron in iron-fortified flours that needs consideration when drawing up quality control measures/standards.

Wheat flour, fortified with iron (A 131 Elemental iron and Reduced iron> at 3 levels, 44, 66 and 88 ppm was analysed for iron content by Phenanthroline method (spectrophotometry) after dry ashing.

Results revealed variations in the endogenous iron levels in flour (11.2-21.3 ppm, on dry basis). The variation could be attributed to (a) the ratios of mixing hard and soft wheat blends (b) % extraction rate (c) contamination of iron from machinery.

Variations in iron levels, mixed in a tumble blender, showed a deviation of >5% than expected value (control + fortified iron). A homogeneity in mixing was observed using a ribbon blender, with a deviation <1.0%.

The study concludes that (a) endogenous iron content in wheat flour is a variable/ crucial factor; (b) dry ashing/UV/VIS spectrophotometric method (spiking method) was the most reliable technique and (c) blending methods can effect variations in results, in the quantification of iron in fortified flour.

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