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Levels of selected metals in commercially available rice in Ethiopia

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This study reports the levels of metals in commercially available imported (*Oryza sativa*) and Ethiopian rice (*Oryza glaberrima*). The levels of thirteen metals (Ca, Mg, K, Na, Fe, Mn, Zn, Cu, Co, Ni, Cr, Cd and Pb) were determined in six varieties of raw rice collected from Addis Ababa supermarkets, Fogera town and Amahara Regional Agricultural Research Institute and in one selected cooked rice by flame atomic absorption spectrometry (FAAS) after digesting the powdered rice samples with HNO₃, HClO₄ and H₂O₂ mixture. The validation of optimized digestion procedure was evaluated using spiking method and an acceptable percentage recovery was obtained. The levels of metals found in the imported and Ethiopian rice, respectively, were in the ranges (mg/kg): Ca 75.8-630, 205-427; Mg 90.6-150, 99.5-2250; K 1680-2150, 1100-3020; Na 70.6-78.6, 26.7-80.9; Fe 48.9-117, 41.3-113; Mn 4.1-15.5, 3.7-16.6; Zn 16.4-25.7, 15.6-140; Cu 2.7-4.9, 3.3-15; Co 12.6-14.6, 8.8-10.4; Ni 2.5-75.1, 41.5-69.7; Cr 2.2-3.12, 2.32-4.82; Cd <0.34, 0.45-2.54; Pb 2.1-5.3, 0.8-3.8. Comparison between levels of metals in the imported and Ethiopian rice showed significant differences for most of the metals. The results indicated that Ethiopian rice is comparatively rich in essential metals than imported. A statistical analysis of variance (ANOVA) at 95% confidence level for metal determination indicated significant difference between the means of each variety of samples. Comparison between levels of metals in cooked and raw rice showed that the difference in the level is not significant.

Biography

Bisratewongel Tegegne Alemu done her PhD & MSc. from Analytical Chemistry; Addis Ababa University, she done her BSc. in Applied Chemistry from Haramaya University, she is currently working as teacher in higher education at Bahir Dar University, Bahir Dar (Ethiopia). she received certificate of oral presenter on 4th Annual conference of Society of Ethiopian Women in Science and Technology, and workshop on Empowering Women in Leadership Skill in Science and Technology, April 2018. she also received certificate on Environmental Risk Assessment Management from Africa Center of Excellence for Water Management (ACEWM) Addis Ababa University, Ethiopia. she won Gold Cup award for being the From Haramaya University, Ethiopia, first from the graduated batch in July 2010.

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