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Influence of growing system on nitrate accumulation in two varieties of lettuce and red radicchio of Treviso

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lettuce; red radicchio of Treviso; nitrate; cultivation systems

Abstract

BACKGROUND: Green leafy vegetables contribute greatly to the total intake of nitrates from the daily diet. This study evaluates the influence of different cultivation systems on nitrate accumulation in leafy vegetables. Two varieties of lettuce (*Lactuca sativa* L.) (Lattuga Romana, Foglia di Quercia) and two varieties of red radicchio of Treviso (*Cychorium intibus* L.) (Early, Late) were selected. Lettuce varieties were both organically and biodynamically grown; red radicchio varieties were conventionally grown both in the field and in spring water.

RESULTS: Both lettuce varieties biodynamically grown accumulated 1.3–2 times less nitrate than the respective organically grown plants. The two lettuce varieties showed differences in nitrate accumulating capacity: Foglia di Quercia was almost three times richer in nitrate than Lattuga Romana. The traditional growing systems applied to the red radicchio of Treviso varieties strongly influenced nitrate accumulation in leaves, the Early variety having up to 15 times higher nitrate than the Late variety.

CONCLUSIONS: Our findings on nitrate levels in both lettuce and red radicchio of Treviso varieties suggest that both genetic factors and cultivation systems strongly affect the nitrate accumulation capacity. This study also highlights how the cultivation strategy can reduce nitrate levels in leafy vegetables, suggesting the possibility of modulating the N supply along the harvesting time. Copyright © 2011 Society of Chemical Industry

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