

Effect of germination periods on proximate and antinutrient composition of grain amaranth flour

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Abstract

Grain amaranth (*Amaranthus cruentus*), a pseudo cereal, has in recent time been explored as a good source of quality protein and other essential nutrients. Despite its rich nutritional profile, grain amaranth contains antinutrients which reduce the bioavailability of its protein. This study employed germination of grain amaranth at room temperature as a pretreatment method to reduce the antinutrient composition. The grains were germinated at different periods (24hrs, 48hrs and 72hrs). The germinated grains were washed, dried and milled into fine powder for analysis. The effects of varying germination periods on the proximate and antinutrients properties of grain amaranth flour were evaluated. The results showed that protein content (17.37%) was significantly ($P < 0.05$) higher in amaranth grains germinated after 24hrs as compared to 48hrs (16.05%) and 72hrs (16.73%) germination periods and that of ungerminated grains (16.08%). Germination at varying periods significantly ($P < 0.05$) reduced the antinutrient contents. The contents of phytate were 0.19, 0.22, 0.23 and 0.81mg/g, oxalate were 0.21, 0.22, 0.20 and 0.52mg/g, saponin were 0.09, 0.11, 0.10 and 0.41mg/g, tannins were 0.17, 0.33, 0.14 and 0.93mg/g and trypsin inhibitor were 0.46, 0.59, 0.44 and 0.86mg/g for 24hrs, 48hrs, 72hrs and ungerminated grains respectively. Over the range of germination periods, it was found that germinating grain amaranth for 24hrs provided the highest protein content and lowest saponin and phytate contents.

Keywords: Grain amaranth, germination, flour, nutrient, antinutrients