WEEDS AS HUMAN FOOD- A CONQUEST FOR CHEAPER MINERAL SOURCES

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ABSTRACT

This study was conducted in April to September 2005 in Peshawar. The aim of the study was to analyze weeds, usually used as vegetables, for their mineral composition and to find out their consumption in the female subjects of the area. Two leafy weeds, used as non-conventional vegetables, were analyzed for selected mineral composition. Amarnath (Amaranthus dubius) and wild onion (Brodiaea capitata) appeared to have different levels of minerals. Amarnath had the highest iron content (34.2 mg/100 g) followed by wild onion leaves (6.9 mg/100g). The Ca, P, Mg, Mn, Cu, and Zn contents of amaranth were 721.2, 654.8, 812.5, 3.8, 1.1, and 4.3/100g, respectively. The contents of these minerals in wild onion leaves were 45.5, 56.9, 154.7, 0.56, 0.68, and 2.98, mg/100g, respectively. The poor families used these weeds abundantly during the season and also they dried them for off season use. Thus these contribute good part of the female RDA’s for these minerals. The intake of these weeds by female subjects (n = 107, mean age =34.5±7.8) of the study show that these vegetables contributed 41 to 79 % of the RDA’s of these minerals of the female subjects of the study locality. The conclusion of the study is that edible weeds can be proved to be good sources of nutrients for human consumption. Further work is needed on the chemical composition of all weeds used as human diet.

Keywords: weeds, human food, minerals, RDA.

INTRODUCTION

The ever-growing human population needs a search for less expensive nutritive sources of food. There are crops often ignored, although having good nutritive values and which can help in coping with the problem to balance the equation between population and food needs (Oyebiodum et al, 1983). Work on chemical composition of wild plants has bee extensively undertaken in poor countries like Nigeria (Eromosele et al, 1991; Eromosele et al, 1993). The conventional vegetables, grown in fields are expensive for most of the people. These wild crops can prove a good alternative for those expensive vegetables.

According to FAO’s Production Yearbooks art of the old tradition is still maintained in some Latin American and eastern Asian countries. In Mexico, more than 20 "weeds" are used as food (Linares and Aguirre 1992). In Korean local markets 112 wild plants are sold at prices higher than those of cultivated species. Moreover, some weeds are exported to the U.S.A. and used to prepare Korean and Chinese typical dishes (Pemberton and Lee 1996). Similarly, Moroccan weeds are exported with the same purpose to the U.S.A., Spain, Italy and Greece (Tanji and Nassif 1995). The use of edible wild plants and weeds has been considered by several authors (Harris 1969, Kunkel 1984, Facciola 1990, Zurlo and Brandão 1990, Duke 1992, Linares and Aguirre, 1992). Clarke (1977), Michael (1980), and Linares and Aguirre (1992) have reported numerous weed based food recipes.

Amarnath is one of the weeds containing much more vitamin A precursor than cabbage and can help to prevent blindness. Amaranth has 13 times more iron than green cabbage, 9 times the calcium, and 57 times more vitamin A precursor. Wild onion is another weed commonly distributed in fields in winter season. It has many uses; particularly its leaves are cooked with maize cake in traditional tandoors. Its bulbs are best cooked, as by slow roasting in n hot ashes, which develops the sweetness. When boiled, this little root is palatable and somewhat resembles the taste of the common potato. The Indian method of preparing it, however, is the best, in which it is roasted on rocks in tandoors. The cooked mass obtained can be pressed into cakes and then dried in the sun, may be preserved for the future use.

In Pakistan, there are numerous varieties of field grown vegetables. These vegetables are expensive and the poor have to look to the weeds for diet. The deficiencies of most of the vitamins present in vegetables are common in Pakistan. The use of these wild vegetables can help in combating these deficiencies. The only need is to explore the chemical composition of these vegetables and to include them in the daily menu planning. Our interest was to evaluate the mineral composition of these vegetables and their contribution in nutrients supply in female of rural areas.

MATERIALS AND METHODS

Sample collection:

Samples were collected from 34 various places of Peshawar rural outskirts. Young and tender leaves of Amaranthus dubius and Brodiaea capitata were separated from their stalks. The leaves were washed thoroughly with de-ionized water and dried in sun. Then these leaves were dried in oven at 700°C. Leaves of the same
dried samples were then powdered with a hammer mill. The powder was kept in airtight poly-ethylene bags and stored in freezer for further mineral analysis.

Mineral analysis:
The samples were digested using nitric acid and perchloric acid mixtures according to the methods of Puspanjali and Santosh (1995). The samples were analyzed for Ca, P, Mg, Mn, Cu, and Zn contents by atomic absorption spectrometry according to the methods given in AOAC (2003). All analyses were carried out in triplicates.

Consumption of weeds:
The intake of these wild vegetables by the female subjects (age 20-45 yrs) of the localities were asked and recoded in a questionnaire. Data from 112 female subjects of 78 families was obtained. These weeds were cooked according to the ordinary cooking methods and made into a curry called SAAG.

RESULTS AND DISCUSSION

Mineral composition:
The mineral composition of *Amaranthus dubiu* and *Brodiaea capitatais* is given in Table-1. The mineral contents of these two edible weeds were different from each other. The Fe, Ca, P, Mg, Mn, Cu, and Zn contents of amarnath were 28.7, 721.2, 654.8, 812.5, 3.8, 1.1, and 4.3 per 100g dry weights, respectively. The contents of these minerals in wild onion leaves were 0.46, 45.5, 56.9, 154.7, 0.56, 0.68, and 2.98, mg per 100g dry weight, respectively. Amarnath was much richer in all mineral contents as compared to wild onions.

<table>
<thead>
<tr>
<th></th>
<th>Fe</th>
<th>Ca</th>
<th>P</th>
<th>Mg</th>
<th>Mn</th>
<th>Cu</th>
<th>Zn</th>
</tr>
</thead>
<tbody>
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<td><em>Amaranthus dubiu</em></td>
<td>28.7</td>
<td>721.2</td>
<td>654.8</td>
<td>812.5</td>
<td>3.8</td>
<td>1.1</td>
<td>4.3</td>
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<tr>
<td>(Amarnath)</td>
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<tr>
<td><em>Brodiaea capitatais</em></td>
<td>0.5</td>
<td>45.5</td>
<td>56.9</td>
<td>154.7</td>
<td>0.6</td>
<td>0.7</td>
<td>2.9</td>
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<tr>
<td>(Wild Onion)</td>
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</tbody>
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Average daily intakes:
The data regarding the average daily intake of these vegetables showed that the daily diet of female from the study area contained 150±4.5 g (100.3 ± 13.4g amarnath and 50.4 ±11.3 g wild onion) fresh leaves of these weeds. Converted into dry weight, 150.2 g fresh weight of these vegetables would yield 15.01 ± 2.4 g of dry weight. The total average of minerals (mg) provided by these vegetables calculated on their dry weight basis is given in Table-2 with the RDA’s for these minerals. The percent adequacy for these minerals furnished by these vegetables is also presented in Table-2.

<table>
<thead>
<tr>
<th>Minerals</th>
<th>RDA’s</th>
<th>Intake</th>
<th>% Adequacy</th>
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<tr>
<td>Fe</td>
<td>15</td>
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<td>19</td>
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<tr>
<td>Ca</td>
<td>800</td>
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<td>9</td>
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</tr>
<tr>
<td>Cu</td>
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<tr>
<td>Zn</td>
<td>12</td>
<td>2.0</td>
<td>17</td>
</tr>
</tbody>
</table>

REFERENCES


