Complementary and Alternative Medicine (CAM) for Type 2 Diabetes Mellitus: A Review

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## Frequency of CAM use

<table>
<thead>
<tr>
<th>Country</th>
<th>% who use CAM</th>
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<tbody>
<tr>
<td>Africa</td>
<td>~80% (WHO Traditional Medicine Strategy 2002)</td>
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<tr>
<td>Australia</td>
<td>52% (McLennan et al. 2002)</td>
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<td></td>
<td>70% (Xue et al. 2007)</td>
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<tr>
<td>Belgium</td>
<td>31% (WHO Traditional Medicine Strategy 2002)</td>
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<tr>
<td>China</td>
<td>40%</td>
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<tr>
<td>France</td>
<td>49%</td>
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<tr>
<td>Japan</td>
<td>~60%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>46%</td>
</tr>
<tr>
<td>UK</td>
<td>~24% (BBC survey 2006)</td>
</tr>
<tr>
<td>USA</td>
<td>&gt;42% (WHO Traditional Medicine Strategy 2002)</td>
</tr>
</tbody>
</table>

(Boedeker, Burford, 2007)  
(World Health Organization, 2002-2005)
Methods

- PubMed search using the keywords:
  "natural products" "herbal medicine" "vitamins" "minerals"
  "herbs" "botanicals" "complementary and alternative medicine" "extract" "food" "diet" combined with the terms
  "diabetes" "diabetes mellitus" or "antidiabetic".

- Seventy two (72) relevant publications selected
Result

• Main CAM used:

  ✓ Life style: Exercise, nutrition/diet

  ✓ Medicinal herbs

  ✓ Nutritional supplements/antioxidants (minerals and vitamins)

  ✓ Acupuncture

  ✓ Hot-tub therapy

  ✓ Spiritual therapy
1. Physical exercise

~90% of people with type 2 diabetes are overweight or obese

2. Nutrition
3. Medicinal herbs

- *Momordica charantia* (karela)
- *Aloe vera*
- *Allium cepa* (onion)
- *Allium sativum* (garlic)
- *Coccinia indica*
- *Ginseng species*
- *Opuntia streptocarpa*
- *Cinnamonum zeylandicum*
- *Trigonella foenum graecum*
- *Gymnema sylvestre*
- *Pterocarpus masupium*
- *Vaccinium myrtillus*
- *Atriplex halimus*
- *Ocimum sanctum*
- *Silymarin*
3.1. *Momordica charantia* (Karela)

- *Cucurbitaceae*
- Bitter melon
- Distribution: Africa, Asia, South America
- Parts used: whole plant, fruit, seed
- Chemicals: charantins, insulin-like peptides, alkaloids

Karela fruit

Welihinda et al., 1986
IPGTT in normal rats – Role of Karela

Fasting blood glucose levels (mmol/l)

Time

0 min 30min 60min 90min 120min 150min 180min

NC NE

P<0.01, NC vs. NE; NE on Momordica charantia; NC On normal saline

Matheka et al., 2011
3.2. *Allium cepa* (onion), *Allium sativum* (garlic)

- Lily family
- Have disulfide compounds that lower glucose level by competing with insulin (a disulfide) for insulin inactivating sites in the liver – hence increasing free insulin
3.3. *Aloe vera*

- Liliaceae family
- Aloe gel preferred over sap
- Aloe gel contains hydrosoluble fibre with hypoglycaemic effect
4. Nutritional Supplements

- Chromium
- Vanadium
- Magnesium
- Zinc
- Alpha-lipoic acid
- Vitamin E
- Vitamin B12
- Vitamin D
- Cinnamon
Antioxidants

- Diets rich in antioxidants including vitamins and minerals or supplemental doses may increase vasodilation, reduce PAI-1, stabilise plaque
  - Chromium
  - Zinc
  - Vitamin C
  - Vitamin E
  - Niacin
  - Manganese
  - CQ10
  - Fish oil supplements (omega 3)
  - Green drinks “phytogreens” e.g. Elotin tea
5. Acupuncture

- Treats by insertion and manipulation of needles in the body
- Known for chronic pain therapy
- Incorporates TCM
- Acts on pancreas to enhance insulin synthesis, accelerates utilization of glucose
- M.O.A. unknown
6. Hot-tub therapy

- Hot-tub therapy increases blood flow to skeletal muscles - recommended to DM pts unable to exercise*

- Hot-tub therapies lead to decreased patient weight, mean plasma glucose level, mean glycosylated haemoglobin*

- Water should not be very hot (patients with neuropathy may burn themselves)

*Hooper et al., 1999.
7. Spiritual therapy

- Does Spiritual Healing Work with other Forms of Healing?
- Any evidence?
- Healing Music
- Energy Healing
- Prayer and Spiritual Therapy

http://spiritualtherapy.readabout.net/
Summary

• CAM use is very common among type 2 diabetics
  ✓ Life style: Exercise, Nutrition / diet
  ✓ Medicinal herbs
  ✓ Nutritional supplements (minerals and vitamins)
  ✓ Acupuncture
  ✓ Hot-tub therapy
  ✓ Spiritual therapy

• Practitioners may combine CAM and OHDs to achieve better glycaemic control