

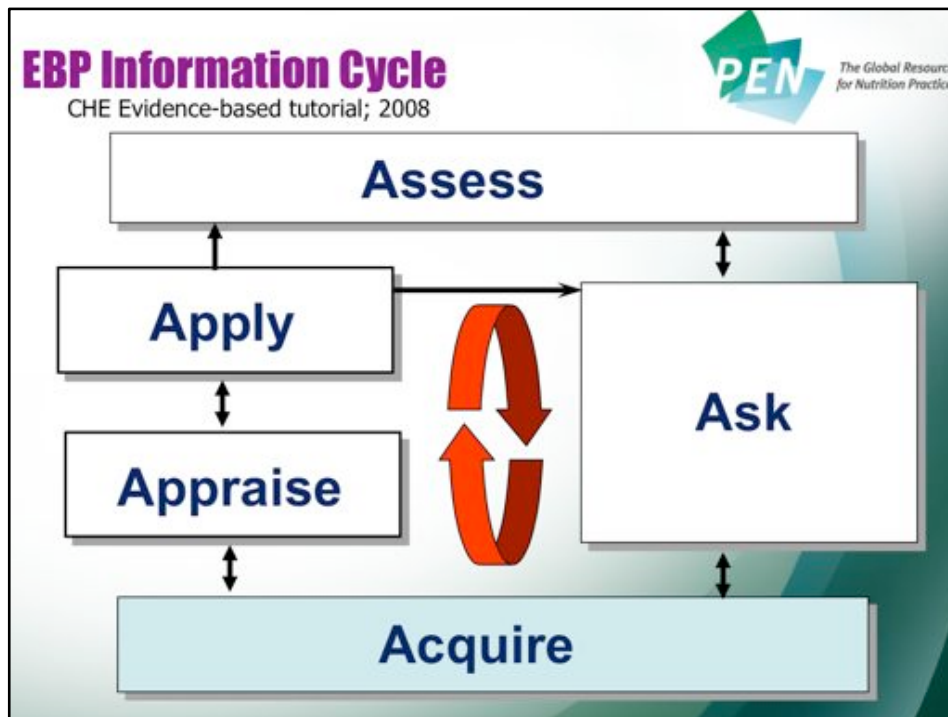


Practice-based Evidence in Nutrition (PEN[®], www.pennutrition.com) is the global resource for nutrition practice.



*The Global Resource
for Nutrition Practice*

Using PubMed to Acquire Evidence



The goal in searching is ideally to find quality answers to your structured questions in a timely manner.

A number of sources are available that provide different types and levels or quality of evidence.

Remember earlier on, we said we are looking for **the BEST evidence**, not every shred of evidence on a particular topic.

To search efficiently, the first source that you search should be good pre-appraised or pre-filtered secondary sources that summarize the literature and give you a useful actionable plan based on the evidence. With these sources, the work of finding and critically appraising the literature has been done for you. Pre-filtered means that an individual or group of individuals with expertise in a particular area have reviewed and presented the information that **was collected, appraised, and combined in the methodologically strongest way**. We will spend a bit of time looking at credible examples of filtered literature in a moment.

How to become a literature search “ACE”



- ◆ Book an appointment with a librarian
- ◆ Take the PubMed Tutorial
- ◆ Practice

A screenshot of the PubMed Tutorial website. The header includes the 'PubMed Tutorial' logo, the text 'U.S. National Library of Medicine National Institutes of Health', and a search bar with a 'Go' button. Below the header is a navigation menu with links for 'Index | Glossary | FAQ | MEDLINE/PubMed Resources Guide | Back to PubMed'. The main content area is titled 'Building the Search' and includes an introduction, a list of learning objectives, and a navigation bar at the bottom with '< Back | 1 | 2 | Next >'.

PubMed Tutorial
U.S. National Library of Medicine
National Institutes of Health

Search NLM Web Site
NLM Home | Contact NLM | Site Map | FAQ

Index | Glossary | FAQ | MEDLINE/PubMed Resources Guide | Back to PubMed

Building the Search

In this module, you will learn how to use PubMed to conduct a search. By the end of this module, you should be able to:

- Understand how PubMed translates basic searches.
- Use Filters to narrow your search.
- Understand and use Boolean operators.
- Use PubMed search tools and related databases to construct a search.
- Build your own search using search field tags.

Throughout this module, you will have an opportunity to test your understanding of what has been presented.

< Back | 1 | 2 | Next >

How to become a literature search ace?

If you haven't done this in awhile, do book an appointment with a medical librarian
Take the PubMed tutorials (they are very good). They can be accessed at: <http://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html>

Practice – you'll get better and develop strategies that work for you.

MeSH Term Demonstration

■ Chromium picolinate and body weight

■ www.pubmed.gov



Let's do a MeSH Term demonstration using chromium picolinate and body weight.
We will do this demonstration at: www.pubmed.gov

PICO terms form your PubMed search strategy



- ◆ In PubMed: www.pubmed.gov under **MORE RESOURCES**, select **MeSH Database**
- ◆ Find the Medical Subject Headings (MeSH terms) for your PICO variables AND terms that are likely important terms that may not have MeSH terms. These are called: “text words”
- ◆ Enter your PICO variables one at a time, choose MeSH terms and add to PubMed search builder

To try this search strategy, go to: www.pubmed.gov

To ensure a thorough search you want to make certain you search all related terms. With your PICO variables identified on the PubMed website under more resources click on MeSH Database. MeSH stands for Medical Subject Headings

MeSH Database - PubMed

PEN The Global Resource for Nutrition Practice

PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed [dropdown] Search

Advanced Help

PubMed

PubMed comprises more than 21 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

Using PubMed

- PubMed Quick Start Guide
- Full Text Articles
- PubMed FAQs
- PubMed Tutorials
- New and Noteworthy

PubMed Tools

- PubMed Mobile
- Single Citation Matcher
- Batch Citation Matcher
- Clinical Queries
- Topic-Specific Queries

More Resources

- MeSH Database
- Journals in NCBI Databases
- Clinical Trials
- E-Utilities
- LinkOut

Click on MeSH Database: <http://www.ncbi.nlm.nih.gov/mesh>

PICO terms form your PubMed search strategy



- ◆ In PubMed: www.pubmed.gov under **MORE RESOURCES**, select **MeSH Database**
- ◆ **Find the Medical Subject Headings (MeSH terms) for your PICO variables AND terms that are likely important terms that may not have MeSH terms. These are called: “text words” e.g. chromium and picolinate**
- ◆ Enter your PICO variables one at a time, choose MeSH terms and add to PubMed search builder

Find the MeSH terms for your PICO variables – overweight, chromium, picolinate, weight. In this example, we chose not to include the term overweight in the search as there are likely limited articles available on this topic to begin with. If you needed to narrow your results then you could do a MeSH search for overweight.

Subheadings in MeSH Search



MeSH [Save search](#) [Limits](#) [Advanced](#)

Display Settings: Full [Send to:](#)

Overweight

A status with BODY WEIGHT that is above certain standard of acceptable or desirable weight. In the scale of BODY MASS INDEX, overweight is defined as having a BMI of 25.0-29.9 kg/m². Overweight may or may not be due to increases in body fat (ADIPOSE TISSUE), hence overweight does not equal "over fat".
Year introduced: 2006

PubMed search builder options

Subheadings:

<input type="checkbox"/> blood	<input type="checkbox"/> ethnology	<input type="checkbox"/> prevention and control
<input type="checkbox"/> cerebrospinal fluid	<input type="checkbox"/> etiology	<input type="checkbox"/> psychology
<input type="checkbox"/> chemically induced	<input type="checkbox"/> genetics	<input type="checkbox"/> radiography
<input type="checkbox"/> classification	<input type="checkbox"/> history	<input type="checkbox"/> radionuclide imaging
<input type="checkbox"/> complications	<input type="checkbox"/> immunology	<input type="checkbox"/> radiotherapy
<input type="checkbox"/> diagnosis	<input type="checkbox"/> metabolism	<input type="checkbox"/> rehabilitation
<input type="checkbox"/> diet therapy	<input type="checkbox"/> microbiology	<input type="checkbox"/> surgery
<input type="checkbox"/> drug effects	<input type="checkbox"/> mortality	<input type="checkbox"/> therapy
<input type="checkbox"/> drug therapy	<input type="checkbox"/> nursing	<input type="checkbox"/> ultrasonography
<input type="checkbox"/> economics	<input type="checkbox"/> pathology	<input type="checkbox"/> urine
<input type="checkbox"/> embryology	<input type="checkbox"/> physiology	<input type="checkbox"/> veterinary
<input type="checkbox"/> enzymology	<input type="checkbox"/> physiopathology	<input type="checkbox"/> virology
<input type="checkbox"/> epidemiology		

MeSH search for overweight (first arrow) yields a much more complicated search (second arrow) where you have a number of subheading to choose from for your search to get the MeSH terms you are looking for. Back to our MeSH search...

PICO terms form your PubMed search strategy



- ◆ In PubMed: www.pubmed.gov under **MORE RESOURCES**, select **MeSH Database**
- ◆ Find the Medical Subject Headings (MeSH terms) for your PICO variables AND terms that are likely important terms that may not have MeSH terms. These are called: “text words” e.g. chromium and picolinate
- ◆ **Enter your PICO variables one at a time, choose MeSH terms and add to PubMed search builder**

Enter the MeSH terms for your PICO variables – chromium, picolinate, weight.

MeSH Database - PubMed

The screenshot shows the MeSH Database interface. At the top right is the PEN logo with the text "The Global Resource for Nutrition Practice". The main heading is "MeSH Database - PubMed". Below this is a search bar with "picolinate" entered. A dropdown menu shows several related terms: "4 nitrophenyl picolinate", "atp independent picolinate coa ligase, streptomyces ansiochromogenes", "chromium picolinate", "ethyl picolinate", "iron ii picolinate", "p nitrophenyl picolinate", "picolinate", and "picolinate carboxylase". An orange arrow points to the search input field. Below the search bar is a "Using MeSH" section with links for "Help", "Tutorials", "E-Utilities", and "NLM MeSH Homepage". At the bottom, there is a "Results: 7 Selected: 1" section. The first result is "picolinic acid [Supplementary Concept]" with a description: "iron-chelating agent that inhibits DNA synthesis; may interfere with iron-dependent production of stable free organic radical which is essential for ribonucleotide reductase formation of deoxyribonucleotides; RN given refers to parent cpd; structure in Merck Index, 9th ed, #7206 Date introduced: July 27, 1981". An orange arrow points to this result in the "PubMed search builder" section, which also contains "Add to search builder", "AND", and "Search PubMed" buttons.

List PICO terms separately (top arrow) and add to the PubMed search builder (bottom arrow).

MeSH Database - PubMed

MeSH terms for weight ←

Display Settings: Summary, 20 per page

Send to: ☺

Results: 1 to 20 of 62 ←

PubMed search builder

"Body Weight"[Mesh] AND "Weight Reduction Programs"[Mesh] AND "Ideal Body Weight"[Mesh] AND "Weight Loss"[Mesh] AND "Body Weight Changes"[Mesh]

Add to search builder AND

Search PubMed

Find related data

Database: Select

Find items

Search details

"weights and measures"[Mesh Terms] OR "body weight"[Mesh Terms] OR weight[Text Word]

Search See more

Recent activity Turn Off Clear

weight (62) list

picolinate (7) list

1. **Body Weight**
The mass or quantity of heaviness of an individual. It is expressed by units of pounds or kilograms.

2. **Weights and Measures**
Measuring and weighing systems and processes.

3. **Weight Reduction Programs**
Services providing counseling and activities that help overweight individuals to attain a more healthy **body weight**.
Year introduced: 2012

4. **Ideal Body Weight**
Expected **weight** of a healthy normal individual based on age, sex, and height. Thus, a malnourished person would weigh less than their ideal **body weight**.
Year introduced: 2010

5. **Kininogen, High-Molecular-Weight**
A plasma protein, molecular **weight** of 110 kD, that normally exists in plasma in a 1:1 complex with PREKALLIKREIN. HMWK is split by plasma kallikrein to produce BRADYKININ. The complex is a cofactor in the activation of coagulation factor XII. The product of this reaction, XIIa, in turn activates prekallikrein to KALLIKREINS. (From Stedman, 26th ed)
Year introduced: 1998

6. **Weight Loss**
Decrease in existing **BODY WEIGHT**.
Year introduced: 1989

MeSH terms for weight: yielded 62 terms including: body weight, weight reduction programs, ideal body weight, weight loss and body weight change (one you can't see here); check those that you want and they get added to the search builder – of the 62 terms we have chosen 5 and added them to the PubMed search builder (see next slide).

PubMed Search



→ PubMed search builder

```
((("Chromium"[Mesh]) AND "picolinic acid"  
[Supplementary Concept]) AND ( "Body Weight"  
[Mesh] OR "Weight Reduction Programs"[Mesh]  
OR "Ideal Body Weight"[Mesh] OR "Weight Loss"  
[Mesh] OR "Body Weight Changes"[Mesh] )
```

Add to search builder



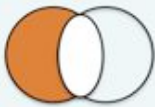
AND ↕ ←

Search PubMed

PubMed Search Builder – you see the PICO variables with the Boolean search terms 'AND' and choosing the 'OR' for the MeSH terms for weight

Boolean Search Terms



Boolean Operator	Example	Retrieves
AND	chromium picolinate AND weight status	
OR	weight loss OR weight gain	
NOT	weight loss NOT weight gain	

Just a quick reminder of Boolean search terms....

PubMed Search



PubMed search builder

```
((("Chromium"[Mesh]) AND "picolinic acid"  
[Supplementary Concept]) AND ( "Body Weight"  
[Mesh] OR "Weight Reduction Programs"[Mesh]  
OR "Ideal Body Weight"[Mesh] OR "Weight Loss"  
[Mesh] OR "Body Weight Changes"[Mesh] )
```

Add to search builder

AND ↕

Search PubMed



Now you click on the Search PubMed button

PubMed Search

PubMed ((["Chromium"[Mesh]] AND "picolinic acid" [Supplementary Concept]) AND ("Body Weight" [Mesh] OR "Weight Reduction Programs" [Mesh] OR "Ideal Body Weight" [Mesh] OR "Weight Loss" [Mesh] OR "Body Weight Changes" [Mesh]))

Results: 9

- The effects of dietary chromium(III) picolinate on growth performance, vital signs, and blood measurements of pigs during immune stress. Kim BG, Lindemann MD, Cromwell GL. Biol Trace Elem Res. 2010 Jun;135(1-3):200-10. Epub 2009 Aug 28. PMID: 19714298 [PubMed - indexed for MEDLINE]
- Chromium picolinate supplementation in women: effects on body weight, composition, and iron status. Lukaski HC, Siders WA, Penland JG. Nutrition. 2007 Mar;23(3):187-95. Epub 2007 Feb 8. PMID: 17291720 [PubMed - indexed for MEDLINE]
- Hypoglycemic potency of novel trivalent chromium in hyperglycemic insulin-deficient rats. Machaliński B, Walczak M, Syrenicz A, Machalińska A, Grymala K, Steciewicz I, Wiszniewska B, Dabkowska E. J Trace Elem Med Biol. 2006;20(1):33-9. Epub 2006 Mar 3. PMID: 16632174 [PubMed - indexed for MEDLINE]

Search details: ["Chromium"[Mesh] AND "picolinic acid" [Supplementary Concept]] AND ("Body Weight" [Mesh] OR "Weight Reduction Programs" [Mesh] OR "Ideal Body Weight" [Mesh] OR "Weight Loss" [Mesh] OR "Body Weight Changes" [Mesh])

Recent activity: ("Chromium"[Mesh]) AND "picolinic acid" [Supplementary Concept] . PubMed, weight (62), picolinate (7)

Search terms (chromium, picolinate, body weight, weight reduction programs, ideal body weight, weight loss and body weight change) show 9 results.

PubMed Filters

- ◆ Filters can be set on the PubMed search page – before doing initial search or added after doing initial search to narrow results
- ◆ New easier access to filters in PubMed since website redesign in May 2012
- ◆ Can examine what was done in: “Search details” box and you can see more....

In addition to using MeSH terms, filters can be added in PubMed – as we can see on the next slide adding filters does affect your results.

MeSH Database - PubMed



Add human studies filter

Display Settings: Summary, Sorted by Recently Added

Send to: Filters: Manage Filters

Results: 5

Filters activated: Humans [Clear all](#)

1. [Chromium picolinate supplementation in women: effects on body weight, composition, and iron status.](#)
Lukaski HC, Siders WA, Penland JG.
Nutrition. 2007 Mar;23(3):187-95. Epub 2007 Feb 8.
PMID: 17291720 [PubMed - indexed for MEDLINE]
[Related citations](#)

2. [Chromium treatment has no effect in patients with poorly controlled, insulin-treated type 2 diabetes in an obese Western population: a randomized, double-blind, placebo-controlled trial.](#)
Kleefstra N, Houweling ST, Jansman FG, Groenier KH, Gans RO, Meyboom-de Jong B, Bakker SJ, Bilo HJ.
Diabetes Care. 2006 Mar;29(3):521-5.
PMID: 16505469 [PubMed - indexed for MEDLINE]
[Related citations](#)

3. [A functional food product for the management of weight.](#)
Bell SJ, Goodrick GK.
Crit Rev Food Sci Nutr. 2002 Mar;42(2):163-78. Review.
PMID: 11934132 [PubMed - indexed for MEDLINE]
[Related citations](#)

4. [\[Effect of chromium yeast and chromium picolinate on body composition of obese, non-diabetic patients during and after a formula diet\].](#)
Bahadori B, Wallner S, Schneider H, Wascher TC, Toplak H.
Acta Med Austriaca. 1997;24(5):155-7. German.

Find related data
Database: (Select)
[Find items](#)

Search details
["Chromium"[Mesh] AND "picolinic acid"[Supplementary Concept]] AND ("Body Weight"[Mesh] OR "Weight Reduction Programs"[Mesh] OR "Ideal Body Weight"[Mesh] OR "Weight Loss"[Mesh] OR "Body Weight Changes"[Mesh]) AND
[Search](#) [See more...](#)

Recent activity
[Turn Off](#) [Clear](#)

- Q ([Chromium][Mesh]) AND "picolinic acid"[Supplementary Concept] , PubMed
- Q ([Chromium][Mesh]) AND "picolinic acid"[Supplementary Concept] , PubMed
- Q weight (82) [PubMed](#)
- Q picolinate (7) [PubMed](#)
- Q chromium (84) [PubMed](#)

[See more...](#)

Add 'Humans' filter and you get 5 articles

Basic PubMed Search



PubMed.gov
US National Library of Medicine
National Institutes of Health

PubMed
Search

[RSS](#) [Save search](#) [Advanced](#)

[Help](#)

Show additional filters

[Clear all](#)

Text availability

Abstract available

Free full text available

Full text available

Publication dates

5 years

10 years

Custom range...

Species clear

Humans

Other Animals

Article types

Clinical Trial

Meta-Analysis

Randomized Controlled Trial

Review

Systematic Reviews

Display Settings: Summary, 20 per page, Sorted by Recently Added

Results: 1 to 20 of 52

Filters activated: Humans [Clear all](#)

1. [Ameliorating effect of chromium administration on hepatic glucose metabolism in streptozotocin-induced experimental diabetes.](#)

Sundaram B, Singhal K, Sandhir R.

Biofactors. 2012 Jan;38(1):59-68. doi: 10.1002/biof.194. Epub 2012 Jan 30.

PMID: 22287284 [PubMed - indexed for MEDLINE]

[Related citations](#)

2. [Chromium dinicotinate supplementation can lower blood glucose, CRP, MCP-1, IGAM-1, creatinine, apparently mediated by elevated blood vitamin C and adiponectin and inhibition of NFkappaB, Akt, and Glut-2 in livers of Zucker diabetic fatty rats.](#)

Jain SK, Croad JL, Velusamy T, Rains JL, Bull R.

Mol Nutr Food Res. 2010 Sep;54(9):1371-80.

PMID: 20306473 [PubMed - indexed for MEDLINE] Free PMC Article

[Related citations](#)

3. [A pilot study of chromium picolinate for weight loss.](#)

Yazaki Y, Faridi Z, Ma Y, Ali A, Northrup V, Njike VY, Liberti L, Katz DL.

J Altern Complement Med. 2010 Mar;16(3):291-9.

PMID: 20192914 [PubMed - indexed for MEDLINE]

[Related citations](#)

Send to:

Filters: [Manage Filters](#)

Find related data

Database:

Search details

Recent activity

Published

Published

Published

Published

Using the same terms as with the MeSH search: chromium picolinate and body weight, in this example we added the human filter and retrieved 52 articles; On the left you can see all filters that are available; on the lower right at the bottom, 'Recent activity' gives you previous searches and you can also see what the search details are especially if you click on See more....



PubMed Search Results Details

Query Translation:

```

("picolinic acid"[Supplementary Concept] OR "picolinic acid"[All Fields] OR
"chromium picolinate"[All Fields]) AND ("body weight"[MeSH Terms] OR "body"
[All Fields] AND "weight"[All Fields]) OR "body weight"[All Fields]) AND "humans"
[MeSH Terms]

```

Search

Result:
52

Stopword(s) ignored:
and

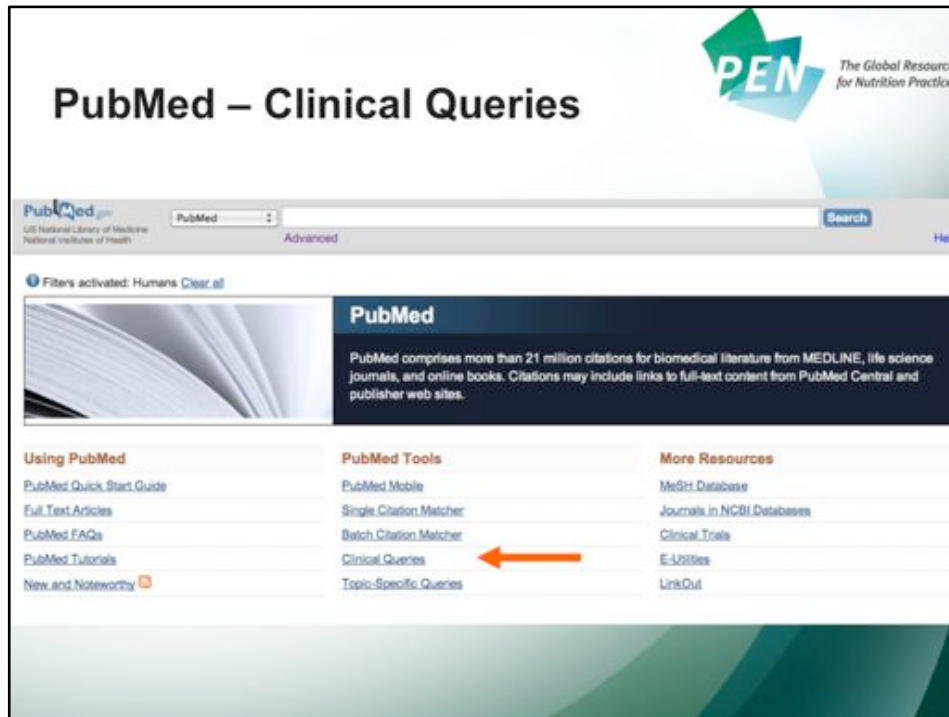
Translations:

body weight	"body weight"[MeSH Terms] OR ("body"[All Fields] AND "weight"[All Fields]) OR "body weight"[All Fields]
chromium picolinate	"picolinic acid"[Supplementary Concept] OR "picolinic acid"[All Fields] OR "chromium picolinate"[All Fields]
Humans[Mesh]	"humans"[MeSH Terms]

Database:
PubMed

User query:
chromium picolinate and body weight AND (Humans[Mesh])

This gives you all of the details of the search terms used and while not visible on this screen shot you also have all of the limits listed. If you remember the MeSH resulted in fewer articles because we had the 5 MeSH terms for weight which narrowed the search



PubMed Clinical Queries is accessed here: <http://www.ncbi.nlm.nih.gov/pubmed/clinical>

PubMed - Clinical Queries 

Use specifically for clinical research

PubMed Clinical Queries
 Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

chromium picolinate and body weight

Clinical Study Categories
 Category:
 Scope:

Systematic Reviews

Medical Genetics
 Topic:

Etiologies
Diagnosis
Therapies
Prognosis
Clinical predications guide

Results: 5 of 85
 Ameliorating effect of chromium hepatic glucose metabolism in s experimental diabetes.
 Sundaram R, Singhal K, Sandhu R. *Diabetes*. 2012 Jan; 61(1):59-65. Epub 2011 Nov 29.
 Renal distal tubule proliferation i 2 level but decreased urine osm treatment with chromium picolin
 Mozaffari MS, Abdelrazek R, Liu JY. *Journal of Clinical Investigation*. 2012 Feb; 122(2):44-8. Epub 2011 Sep 28.
 The effect of different levels of nicotin...

Results: 3 of 3
 Chromium picolinate for reducing body weight: meta-analysis of randomized trials.
 J Clin Nutr. 2012 Feb; 92(2):204S-51.
 Chromium picolinate for reducing body weight: meta-analysis of randomized trials.
 J Clin Nutr. 2012 Feb; 92(2):204S-51.
 Chromium picolinate for reducing body weight: meta-analysis of randomized trials.
 J Clin Nutr. 2012 Feb; 92(2):204S-51.

Results: 3 of 3
 Efficacy of chromium picolinate on performance and tissue accretion in pigs with different lean gain potential.
 Mooney KW, Cromwell GL. *J Anim Sci*. 1999 May; 77(5):1188-96.
 Insulin resistance in Mexican Americans—a precursor to obesity and diabetes?
 McCarty MF. *Med Hypotheses*. 1993 Oct; 41(4):308-15.
 Zinc and its deficiency diseases.
 Evans GW.

Using clinical queries to identify specific clinical research – use search terms from the PICO question;
 The Clinical Study Categories are: etiologies, diagnosis, therapies, prognosis, clinical predications guide.
 In this example of chromium picolinate and body weight 3 systematic reviews are found - these three were found in the general PubMed search but not the focused search from the MeSH search builder.

Abstract and Related Citations

<http://www.ncbi.nlm.nih.gov/pubmed/20192914>

PubMed.gov
US National Library of Medicine
National Institutes of Health

Search

Display Settings: Abstract

Send to:

J Altern Complement Med. 2010 Mar;16(3):291-9.

A pilot study of chromium picolinate for weight loss.

Yazaki Y, Fathi Z, Ma Y, Ali A, Nothmann Y, Niks VY, Libert L, Katz DL.
Yale-Griffin Prevention Research Center, Derby, CT 05418, USA.

Abstract

BACKGROUND: Chromium is an essential trace element and nutritional supplement that has garnered interest for use as a weight loss aid.

OBJECTIVE: This trial assesses the effects of chromium picolinate supplementation, alone and combined with nutritional education, on weight loss in apparently healthy overweight adults.

DESIGN: This was a randomized, double-blind, placebo-controlled trial of 80 otherwise healthy, overweight adults assessed at baseline for central adiposity measured by computerized tomography. Subjects were randomly assigned to daily ingestion of 1000 microg of chromium picolinate or placebo for 24 weeks. All subjects received passive nutritional education at the 12-week point in both the intervention and control groups. Outcomes include weight, height, blood pressure, percent body fat, serum, and urinary biomarkers.

RESULTS: At baseline, both the chromium and placebo groups had similar mean body mass index (BMI) (chromium = 36 +/- 6.7 kg/m² versus placebo = 36.1 +/- 7.6 kg/m²; p = 0.98). After 12 weeks, no change was seen in BMI in the intervention as compared to placebo (chromium = 0.3 +/- 0.8 kg/m² versus placebo = 0.0 +/- 0.4 kg/m²; p = 0.07). No change was seen in BMI after 24 weeks in the intervention as compared to placebo (chromium = 0.1 +/- 0.2 kg/m² versus placebo = 0.0 +/- 0.5 kg/m²; p = 0.81). Variation in central adiposity did not affect any outcome measures.

CONCLUSIONS: Supplementation of 1000 microg of chromium picolinate alone, and in combination with nutritional education, did not affect weight loss in this population of overweight adults. Response to chromium did not vary with central adiposity.

Related citations in PubMed

A double-blind, placebo-controlled, exploratory trial of [J Psychiatr Pract. 2009]

Chromium picolinate supplementation in women: effects on body we [Nutrition. 2009]

Supplementation with cholecalciferol does not result in weight [Eur J Endocrinol. 2009]

Chromium picolinate and biotin combination improves [Diabetes Metab Res Rev. 2009]

Review Overweight and obesity: pharmacoth [J Am Acad Nurse Pract. 2011]

See reviews. See all

Cited by 1 PubMed Central article

Chromium effects on glucose tolerance an

When you are looking at an abstract (<http://www.ncbi.nlm.nih.gov/pubmed/20192914>) – also look at the “Related citations in PubMed” – for your best fit articles to see if the closest related articles are useful

Literature searching summary:

- ◆ Find the terms for your PICO variables to search
- ◆ Prepare a list of your MeSH terms and text words
Look first for: Filtered literature (systematic reviews and clinical practice guidelines)
- ◆ If you have not found enough in the filtered literature, begin searching primary studies (combine terms using Boolean connector “AND” (or “OR”) use appropriate filters and don’t forget to check related citations)
- ◆ Perhaps contact your local Librarian

Use limits to select for reviews guidelines

PEN® Training Modules



The following other PEN® Training Modules are available:

- Evidence-based Process
- Asking the Question
- Appraising the Literature
- Quick Review of Study Designs

The other PEN® Writer training modules can be accessed at: <http://www.pennutrition.com/WriterGuide.aspx>



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for Nutrition Practice*

**Thank you for your time in
reviewing this module.**

Come be social with PEN



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