**SelenoExcell®: PD essentials for Prostate Health**

**Clinically-Effective for Prostate Health**:

* Daily supplementation of 200μg/d [from SelenoExcell®; a high-selenium yeast (HSY)] for 4.5 yrs by individuals presenting with skin cancer (N=1312; 980♂(75%)/332♀; ave-63yrs) was found to have the following benefits (% reduction and p-value vs placebo);[[1]](#endnote-1)
  + ***63% reduction in prostate cancer*** *(p=0.002)*
  + ***58% reduction in colorectal cancer*** *(p=0.03)*
  + ***46% reduction in lung cancer*** *(p=0.04)*
  + ***37% reduction in all cancer incidence****(p=0.001)*
  + ***50% overall reduction in cancer mortality*** *(p=0.002)*
* Further analysis of the study above revealed the following:[[2]](#endnote-2)
  + *Greatest reductions in prostate cancer were seen in men…*
    - ***With lower baseline blood selenium levels*** *(ie, <121.2ng/ml)*
      * ***92% reduction in prostate cancer*** *in the those with the lowest baseline plasma selenium (ie, bottom tertile; <106.4ng/ml; p=0.002)*
      * ***70% reduction in prostate cancer*** *in the middle tertile for baseline selenium (106.4-121.2ng/ml; p=0.03)*
      * ***15% reduction in prostate cancer*** *in the upper tertile for baseline selenium (121.2ng/ml; not statistically significant at p=0.75)*
    - ***With lower PSA***
      * ***74% reduction in prostate cancer*** *in men w/PSA <4ng/ml (p=0.009), which accounted for 92% of all the subjects in the study.*
      * ***81% reduction in prostate cancer*** *in men w/PSA >4ng/ml (p=0.005), which accounted for 8% of all the subjects in the study*
        + ***89% reduction in prostate cancer*** *in men w/PSA 4-10ng/ml (p=0.02), which accounted for 7% of all the subjects in the study*
        + ***52% reduction in prostate cancer*** *in men w/PSA >10ng/ml (p=0.39), which accounted for 1% of all the subjects in the study*
    - ***Who were younger*** *as there was a 91% reduction in prostate cancer in men under 65 vs 51% reduction in those 65 and above; with the difference trending towards significance (p=0.1).*
  + The above results were confirmed even after a longer follow-up time verifying that those with the lowest baseline plasma selenium levels (<123.2ng/ml) had the most significant reductions in prostate cancer incidence.[[3]](#endnote-3),[[4]](#endnote-4)
  + In addition, a meta-analysis of 9 studies involving 13,254 individuals found that there was an inverse relationship between plasma/serum selenium levels and prostate cancer occurred up to 170ng/ml (as compared to those with blood levels of 60ng/ml). Three studies looked at toenail selenium and found that those who had selenium levels between 0.85 and 0.94μg/g (= to blood levels that ~120-150ng/ml) had a **71% reduction in prostate cancer risk**.[[5]](#endnote-5),[[6]](#endnote-6)
  + Contrast the above beneficial effects with the SELECT trial (The **Sel**enium and Vitamin **E** **C**ancer Prevention **T**rial) that found no benefit with 200μg Se/d (from selenomethionine; SeMet) either alone or in combination with 400IU vitamin E (all rac-α-acetate) in 35,533 men.[[7]](#endnote-7) In fact, the study which cost >$170mm was cut short by 1.5 yrs due to no effect.

**Form of selenium is important as not all seleniums are alike or equally bioeffective:**

* First direct comparison between SelenoExcell® (200 or 285μg Se/d) and selenomethionine (200μg Se/d) for 9 mo found that SelenoExcell® outperformed SeMet in healthy males (N=69; ave 51yrs) based on the following:[[8]](#endnote-8)
  1. **Bioavailability.** Bioavailability was equal between 285μg Se from HSY as with 200μg Se from SeMet, with both being greater than 200 μg Se from HSY.
  2. **Bioefficacy.**
     + Only the 285μg Se from high-selenium yeast lowered both oxidative measures; lowering **urinary 8-isoprostane** (*a measure of lipid peroxidation*) **31%** and **urinary 8-OHdG** (*a measure of oxidative damage to DNA*) **33%**, while the 200μg Se from high-selenium yeast reduced these oxidative measure 14% and 8% respectively, while SeMet produced no changes (+2% and 0%, respectively, despite producing higher plasma selenium levels than the lower dose SelenoExcell. As a point of reference, each group had only between 15 and 20 per group (ie, 18 (P), 16 (low dose HSY); 15 (high-dose HSY).
     + This study also found that those with lower baseline levels of plasma selenium (ie, lower tertile) experienced the greater reduction in oxidative measures, supporting clinical data above.
* Additionally, SelenoExcell® has been shown to increase prostate tissue selenium levels in those with prostate cancer[[9]](#endnote-9) more effectively than selenomethionine;[[10]](#endnote-10) increasing such levels 34% vs 22% with selenomethionine even though both used same selenium dose (200μg/d) and were of similar duration (~1 mo). The authors of the SelenoExcell clinical stated that the *‘increased selenium uptake in the prostate after supplementation with selenized yeast as compared to SeMet may potential explain differences in results between the original Clark studies and SELECT.’*

**Product** **Development**

* **SelenoExcell®**
* **Whole** **food, fermented, food-grade yeast** (*Saccharomyces cerevisiae*)
* **100% of the selenium is organically-bound** (with no free inorganic selenium)
* **Full-spectrum of highly bioavailable selenium complexes** (as yeast converts less bioavailable inorganic selenium into more highly bioavailable organic forms; including, but not limited to, selenomethionine and methylselenocysteine)
  + **Question: Does SelenoExcel contain p-XSC? And if so, has it been quantified?**
* **Consistent batch to batch reliability**
  + - Full production documentation
    - Establish standard selenium speciation and “fingerprint”
    - Maintain batch to batch records are maintained and demonstrate high reproducibility with less 5% variation in target potency
    - Registered yeast strain with ATCC
* **Dose:**
  + ***Revised Daily Value (DV):* 55μg Se** (requires 45.8mg SelenoExcell®); was formerly 70μg Se
  + ***Clinically-effective dose:* 200μg Se** (requires167.7mg SelenoExcell®)
* **Cost effective:**
  + **55μg Se/d** (one month supply): **$0.07**
  + **200μg Se/d** (one month supply): **$0.24**
* **Stability:** Very stable, with data showing no change after more than 10 yrs

**Intellectual Property** (IP)

* 1. ???

**Regulatory**

* + **GRAS:**
    - **GRAS**. On March 9, 2009, Cypress was awarded an FDA GRAS (Generally Regarded As Safe) “Letter of No Objection” for SelenoExcell®.
    - This makes SelenoExcell the first form of selenium to ever receive this recognition from FDA.
    - This GRAS approval allows SelenoExcell® to be formulated into the functional food and beverage industry.
  + **Qualified Health Claim** **for selenium**[[11]](#endnote-11) which can be stated as either of the following:
    - **Claim 1.** *“Selenium may reduce the risk of certain cancers. Some scientific evidence suggests that consumption of selenium may reduce the risk of certain forms of cancer. However, FDA has determined that this evidence is limited and not conclusive.”*
    - **Claim 2.** *“Selenium may produce anticarcinogenic effects in the body. Some scientific evidence suggests that consumption of selenium may produce anticarcinogenic effects in the body. However, FDA has determined that this evidence is limited and not conclusive.”*
  + **Monographs:** Pending USP and NIST monograph standard utilizing SelenoExcell as the standard for high selenium yeast

**Company Information:**

* + Company websites: [www.cypressingredients.com,](http://www.cypressingredients.com/) [www.selenoexcell.com](http://www.selenoexcell.com/)
  + SelenoExcell Research Matrix: <http://cypressingredients.com/research/>
  + Due to the significant biological effects of SelenoExcel, Cypress is a member of JPW3 Outreach, as 501c-3 non profit charitable organization committed to the purpose of waging war on disease and suffering.

**References:**

1. Clark LC, Combs Jr GF, Turnbull BW et al. *Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin.* **JAMA** 1996;276:1957-63. [↑](#endnote-ref-1)
2. Clark L, Dalkin B, Krongrad A et al*. Decreased incidence of prostate cancer with selenium supplementation: results of a double-blind cancer prevention trial.* **Brit J Urology** 1998;81:730-4. [↑](#endnote-ref-2)
3. Duffield-Lillico AJ, Dalkin BL, Reid ME et al. *Selenium supplementation, baseline plasma selenium status and incidence of prostate cancer: an analysis of the complete treatment period of the Nutritional Prevention of Cancer Trial.* **BJU Int** 2003;91:608-12. [↑](#endnote-ref-3)
4. Duffield-Lillico AJ, Reid ME, Turnbull BW et al. *Baseline characteristics and the effect of selenium supplementation on cancer incidence in a randomized clinical trial: A summary report of the Nutrition Prevention of Cancer trial.* **Cancer Epidemiol Biomark Prev** 2002;11:630-9. [↑](#endnote-ref-4)
5. Hurst R, Hooper L, Nort T et al. *Selenium and prostate cancer: systematic review and meta-analysis.* **Am J Clin Nutr** 2012;96:111-22. [↑](#endnote-ref-5)
6. Richman EL, Chan JM. *Selenium and prostate cancer: the puzzle isn’t finished yet.* **Am J Clin Nutr** 2012:96:1-2. [↑](#endnote-ref-6)
7. Lippman SM, Klein EA, Goodman PJ et al. *Effect of selenium and vitamin E on risk of prostate cancer and other cancers.* **JAMA** 2009;301-39-51. [↑](#endnote-ref-7)
8. Richie Jr JP, Das A, Calcagnotto AM et al. *Comparative effects of two different forms of selenium on oxidative stress biomarkers in healthy men: a randomized clinical trial.* **Cancer Prev Res** 2014;7:796-804. [↑](#endnote-ref-8)
9. Algotar AM, Stratton MS, Xu MJ et al. *Dose-dependent effects of selenized yeast on total selenium levels in prostatic tissue of men with prostate cancer.* **Nutr Cancer** 2011;63:1-5. [↑](#endnote-ref-9)
10. Sabichi AL, Lee JJ, Taylor RJ et al. *Selenium accumulation in prostate tissue during a randomized, controlled short-term trial of L-selenomethionine: a Southwest Oncology Group Study.* **Clin Cancer Res** 2006;12:2178-84. [↑](#endnote-ref-10)
11. https://www.fda.gov/food/ingredientspackaginglabeling/labelingnutrition/ucm072780.htm [↑](#endnote-ref-11)