

Big Sur Scientific LLC

Bringing Science to the Art of Cannabis



Cannabis Is Medicine, Analyze it as Such

- Long term national acceptance of legalized cannabis will happen by emphasizing marijuana's medical benefits, and putting the industry on a sound scientific footing
- Cannabis is medicine and it should be tested like medicine, at all stages of the development, manufacturing, and sales process, just like in the pharmaceutical industry
- Pharma's Chemical Analysis Needs
 - Internal – Data stays within company, used for internal decisions: Does this raw material meet specs, is this batch of API pure enough? Is this process under control?
 - External – Label claims and FDA Filings – is this drug safe and effective?
- Potency is the most important piece of info on a medicine
- Potency must be tested from point of manufacture to customer to insure safety and efficacy
- 1 potency measurement does not suffice

Current State of Cannabis Potency Testing

- **Internal Potency Testing is rarely done**
- **Label Claims – samples must be transported to a lab, sacrifice $\frac{1}{2}$ gram or more of valuable sample, and wait days for results.**
- **Frequently only 1 potency test per sample per batch/grow/run is made, this is not a representative number!**
- **What if there were a way for growers, extractors, and dispensaries to perform their own potency testing on buds, extracts, shatter, resin, rosin, sugar, and wax quickly and easily?**

The BSS 2000 Cannabis Analyzer

A Complete Cannabis Analysis System

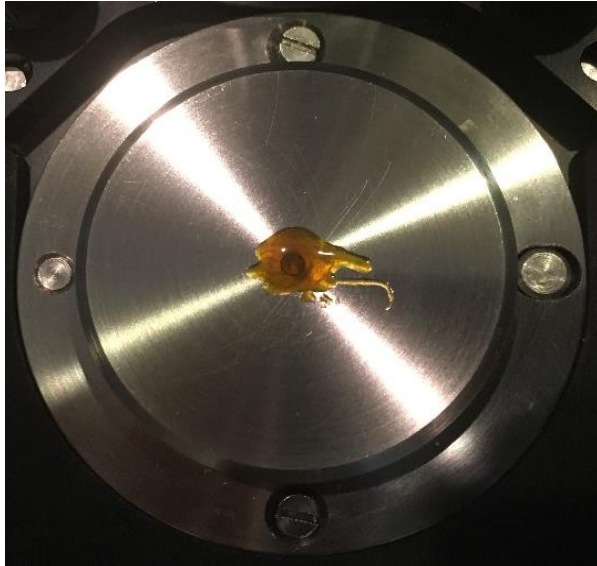


Advantages of the BSS 2000

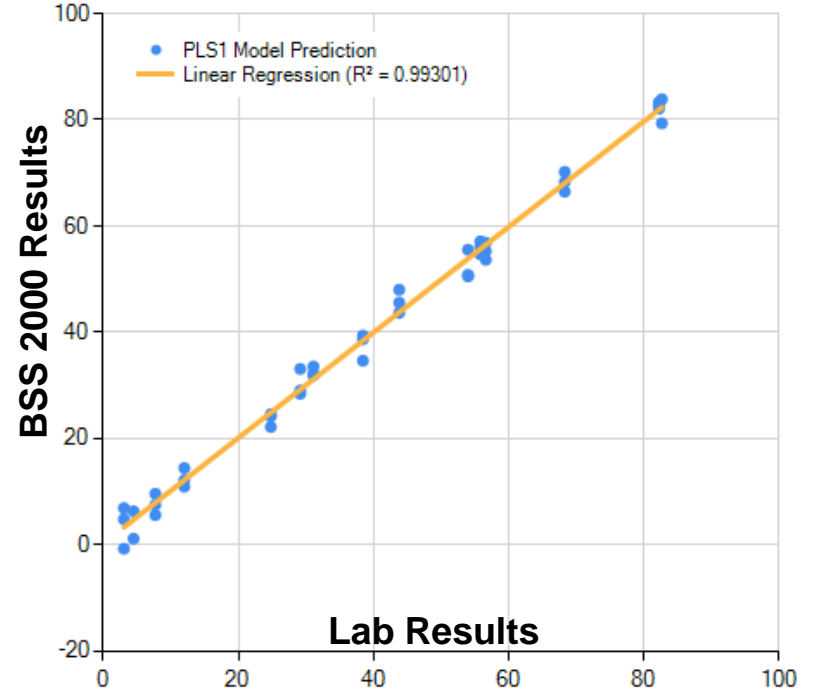
1. **Works On** - buds, extracts, oils, shatter, resin, rosin, sugar, and waxes
2. **Small and Lightweight** – Measure potencies yourself when and where you want.
3. **Fast** - Results in under 2 minutes.
4. **Easy** - Push button operation, anyone can do potency testing!
5. **No Grinding or Disolving**—analyze samples as is.
6. **Accurate** – Potency accuracies to better than ± 2 weight %.
7. **Little Sample Sacrifice** – only a few milligrams of sample are used, no need to sacrifice grams of your valuable product.
8. **Save Time and Money** – No need to send samples to outside labs for slow and expensive analysis. Do it yourself and get immediate results!
9. **Pre-calibrated** – Works right out of the box.
10. **Representative Results** – easily analyze multiple samples, getting a truly representative picture of your product or process



Extracts Analysis

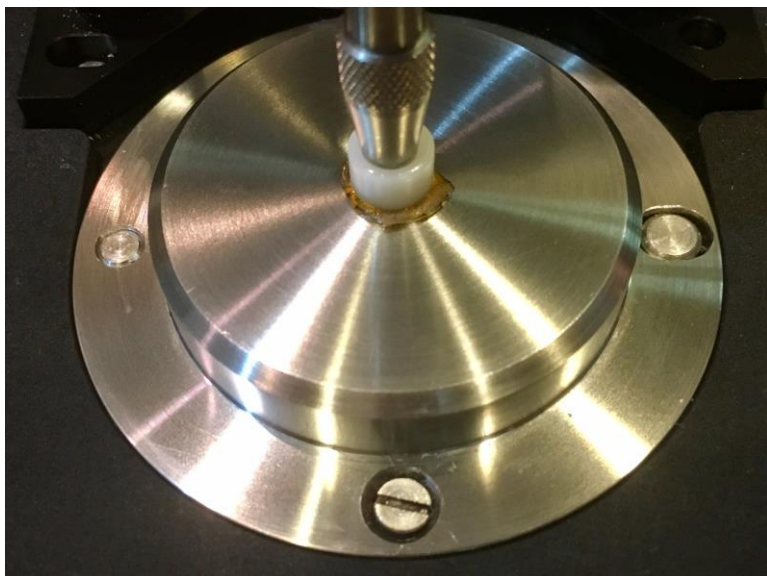


BSS 2000 Results
Total THC vs. Lab HPLC for Cannabis Extracts

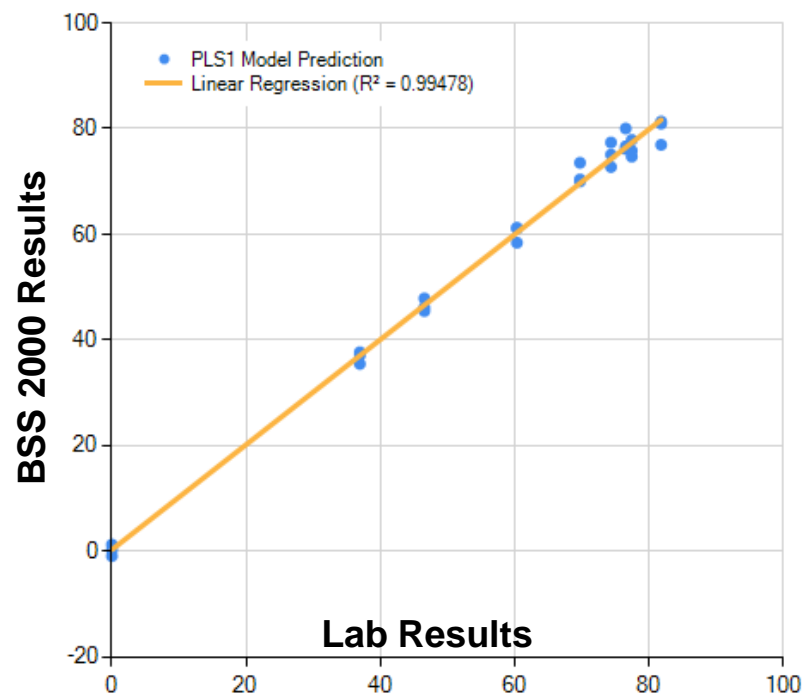


Analyte	R^2	Accuracy
Total THC	0.99	± 1.6 Wt. %
Total CBD	0.99	± 1.4 Wt. %
CBN	0.96	± 0.04 Wt. %

Shatter/Resin/Sugar/Wax Analysis



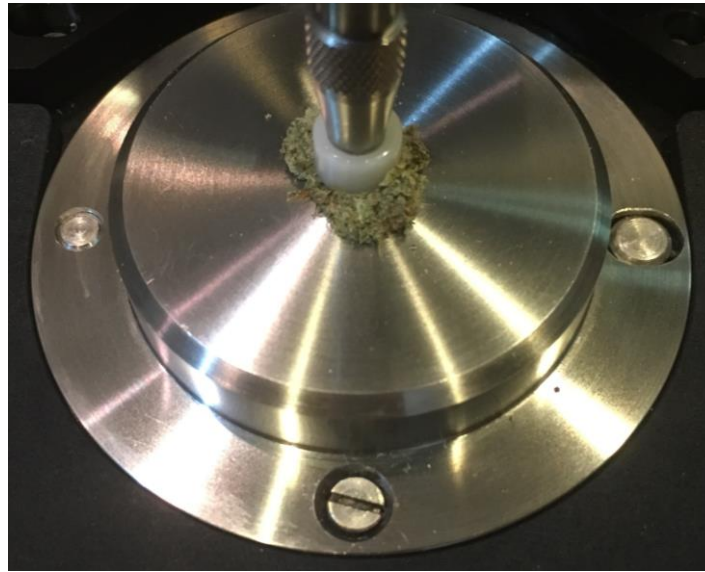
BSS 2000 Results
THCA vs. Lab HPLC Shatter/Resin/Rosin/Sugar/Wax



Analyte	R ²	Accuracy Wt. %	Averaged Accuracy
THCA	0.995	±1.6	±1.0
THC	0.98	±1.9	±1.2
CBN	0.98	±0.07	±0.05
Total CBD	0.99	±1.1	±0.5

Bud Analysis: The Importance of Averaging

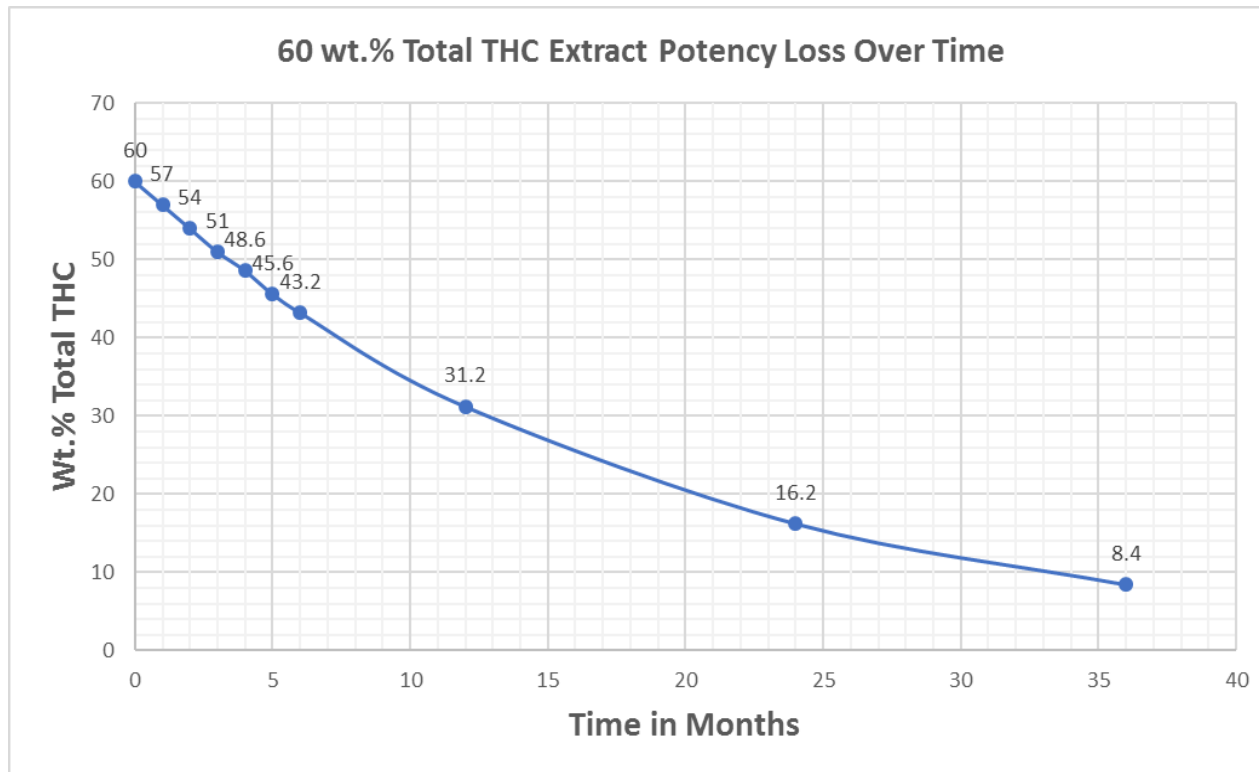
- Cannabis Buds are a natural, complex, inhomogeneous material
- To measure representative potencies, the average of multiple samples must be measured
- Averaging improves the accuracy of potency measurements
- Our Cannabis Analyzer Software allows averaging of 3 or more readings per sample to give you the best potency results



Analyte	3 Readings Averaged Accuracy, Wt.%
THCA	±1.5
THC	±0.2

Cannabis Extracts Lose Potency

- Total THC and Total CBD in 5 extracts were measured 1 year apart using the BSS 2000
- Significant potency loss over time
- Half life of Total THC in Extracts is 12.8 Months
- Half life of Total CBD in Extracts is 10.3 Months



An fresh extract with 60% potency degrades to 51% in just 3 months

BSS 2000 Applications

1. **Growers – Better determine harvest time, understand how growing conditions affect potency.**
2. **Extractors – Better understand how processing affects potency, process monitoring and control.**
3. **Buyers/Brokers/Dealers – Can accurately determine the potency of what they are buying/selling and price it properly**
4. **Edibles Manufacturers – Certify true potency of oils you add to products, giving more accurate label claims.**
5. **Dispensaries – Truer picture of what you are buying, ascertain product shelf life, point of sale analysis – know your medicine!**
6. **Cannabis Analysis Labs – enables fast potency test at similar price to LC test, much greater profit margin, frees technicians for more taxing analyses**
7. **Label Claims**
8. **Basic Cannabis Science**

Conclusions

- 1. To insure safety and efficacy, there is a need in the Cannabis industry for internal potency testing at more times and places than currently available**
- 2. The BSS 2000 Cannabis Analyzer from Big Sur Scientific accurately determines Total THC, Total CBD, and CBN in extracts/oils.**
- 3. The BSS 2000 accurately determines THCA, THC, Total CBD, and CBN in Shatter/Resins/Wax/Sugar**
- 4. The BSS 2000 Accurately determines Total THC, THCA, and THC in buds**
- 5. The BSS 2000 is the answer to the Cannabis industries' need for fast, easy, and accurate potency testing**

Thank You!



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