The Saffrosystems 'i-Eye®'

Problem Statement: Saffron is one of the most adulterated crops that is sold on the global market, and current standardization tools used for identifying predominate saffron chemical constituents (crocin, picrocrocin, and safranal) are variable depending on the analysis, and expensive.

Problem Solution: Determine if dried saffron stigma filaments are authentic or adulterated.

Example: Current traditional methods to identify saffron rely on human experienced identification via color (eyes), aroma (nose), testing the dry product (taste), and by how brittle the dry stigma filaments are (touch).

Example: Current scientific methods to identify saffron rely on UV-spectrophotometry, gas-chromatography (GC), high-performance liquid chromatography (HPLC), high-performance thin-layer chromatography (HPTLC), nuclear magnetic spectroscopy (NMS), and a variety of other chemical analytical tests, of which all require niche expertise, expensive equipment, and are generally performed by an independent laboratory.

Solution: Demonetize (lower the cost of) and democratize (make affordable and accessible to a global audience) the technology available to global saffron producers, consumers, researchers and customs officials, that will, with greater accuracy (less variability and margin of error), assess the chemical constituents of dry saffron (red stigma filaments).

Objectives/Key Measures: Develops tools which are cheaper and more accurate than current chemical analytical tools for saffron.

Objective 1. Proof of Concept: Build and train a program that will take in images of dried saffron, and output whether or not the saffron is authentic or fake.

Measure 1. Have independent researchers and producers use the technology on their own saffron, and contrast the results to their previously-used methodologies.

Objective 2. Proof of Concept: Build and train a subsidiary program that will take in images of saffron, and output predicted quantities of crocin, picrocrocin and safranal.

Measure 2. Have independent researchers and producers use the technology on their own saffron, and contrast it to a chemical analytical test from a reputable and independent chemical analytics lab.

Objective 3. Train a subsidiary program that will take in images, and output dry saffron stigma filament chemical analytics on crocin, safranal and picrocrocin more accurately than top tier chemical-analytic tools (UV-Spectrophotometric, NMR-Spectrophotometric, HPLC, HPTLC, GC, etc.).

Measure 3. Have independent researchers and producers use the technology on their own saffron, and contrast the results to a chemical analytical test from a reputable and independent chemical analytics lab on the same randomly chosen samples of dry saffron from each independent researcher and producer involved in the study.