CONGRESO 30 DE LA CAFICULTURA

INNOVACIÓN Y TECNOLOGÍA AL SERVICIO DEL CAFÉ DE GUATEMALA

Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Innovación en el Modelo de Negocio en Procesos y Subproductos de Café

Ing.Rubén Darío Sorto Alvarado
YPAR Consulting

“La innovación que no conduce a una mayor rentabilidad, o a mercados mas atractivos, solo es una carga financiera mas para nuestras empresas”

McKinsey Quarterly, 2018

Anacafé® ASOCIACION NACIONAL DEL CAFE

Funcafé® FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Partamos de las siguientes premisas

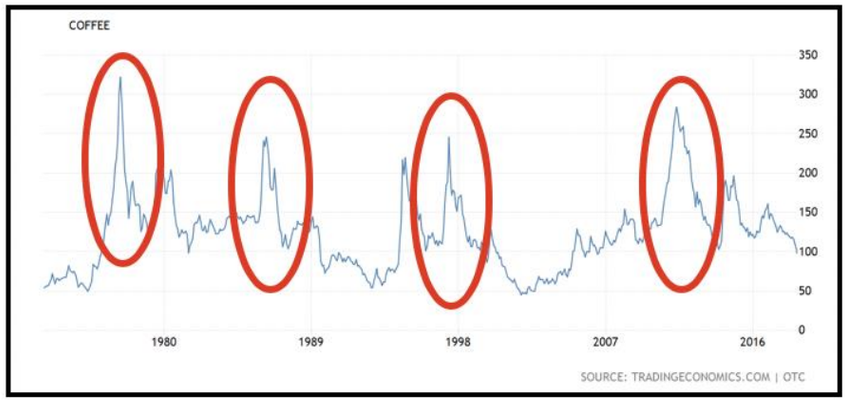
- La caficultura se ha caracterizado por depender de un solo ingreso: la venta de café verde, cuyo precio ha sido determinado por oferta y demanda internacionales

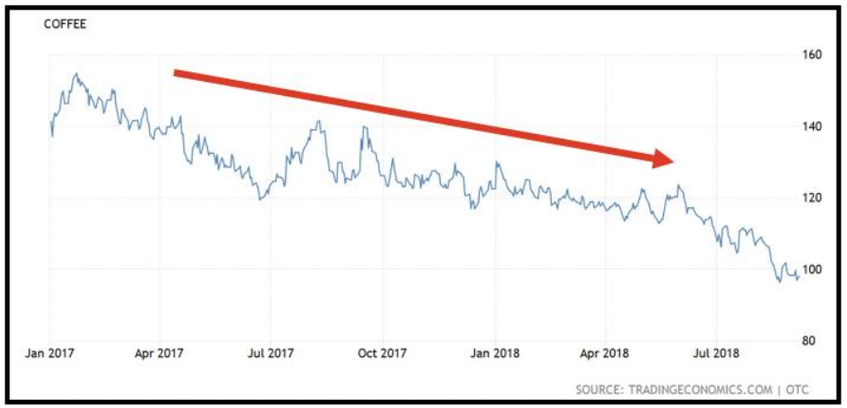
- Para poder desligarse del precio de bolsa (por que si es posible), es necesario producir cafés con una calificación de taza que permita diferenciarnos en el mercado

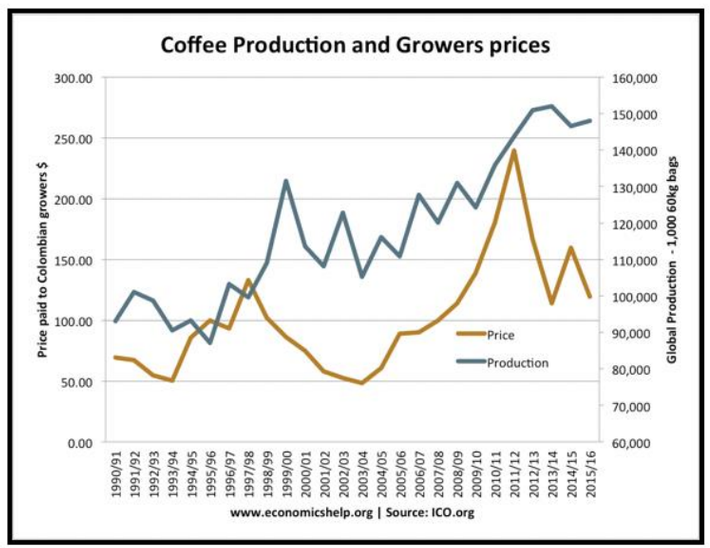
- Debemos entender a profundidad la ciencia y tecnología que permitan incrementar y estandarizar la calidad de manera sostenible de nuestro principal producto, pero no detenernos allí…

- Debemos a la vez explorar procesos que permitan 1) optimizar nuestros insumos/recursos al incrementar el valor de nuestros productos actuales y 2) diversificar nuestra oferta de productos en base a lo que el mercado mundial está demandando

Producción Cafetalera Mundial - Ciclos en Precios



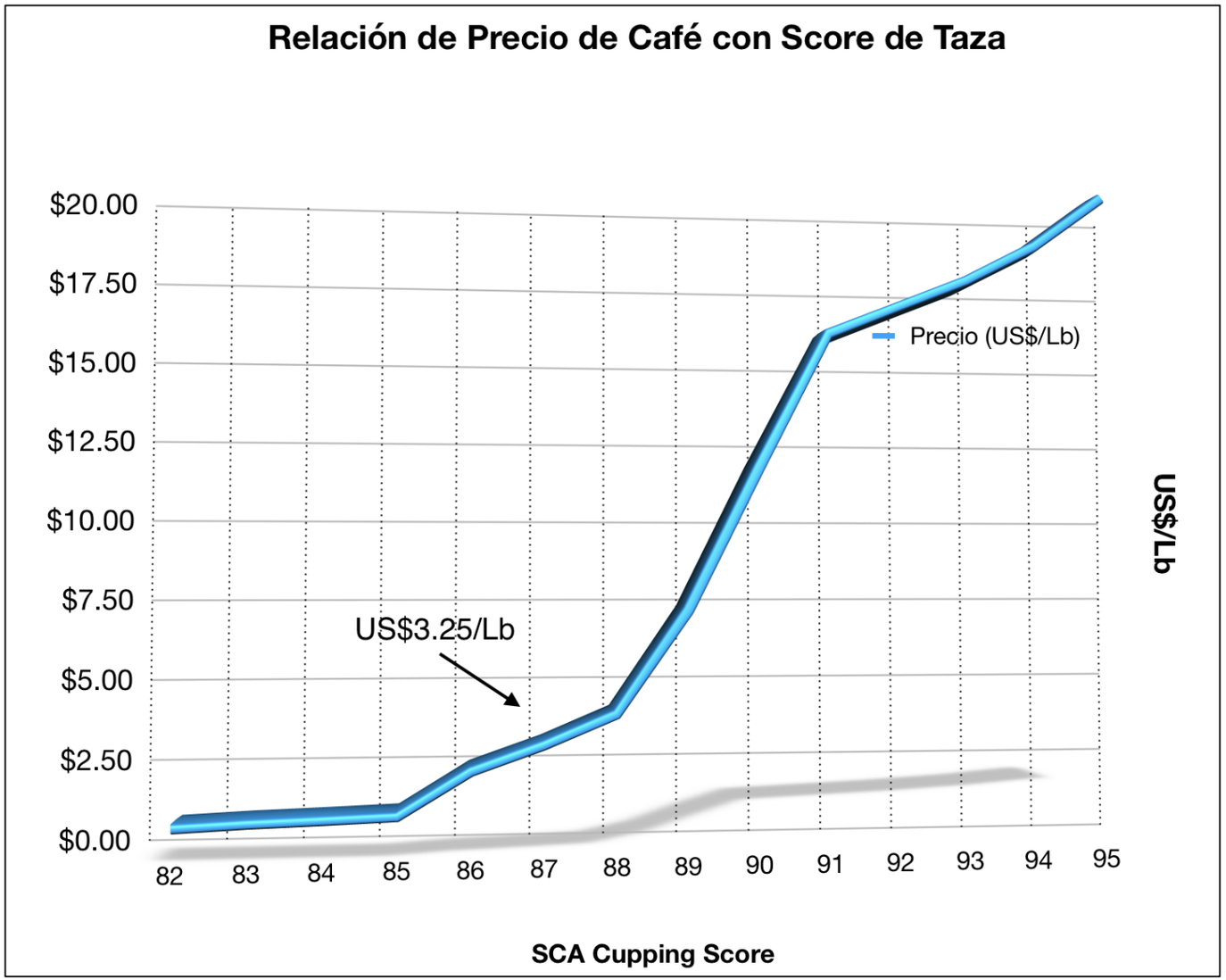




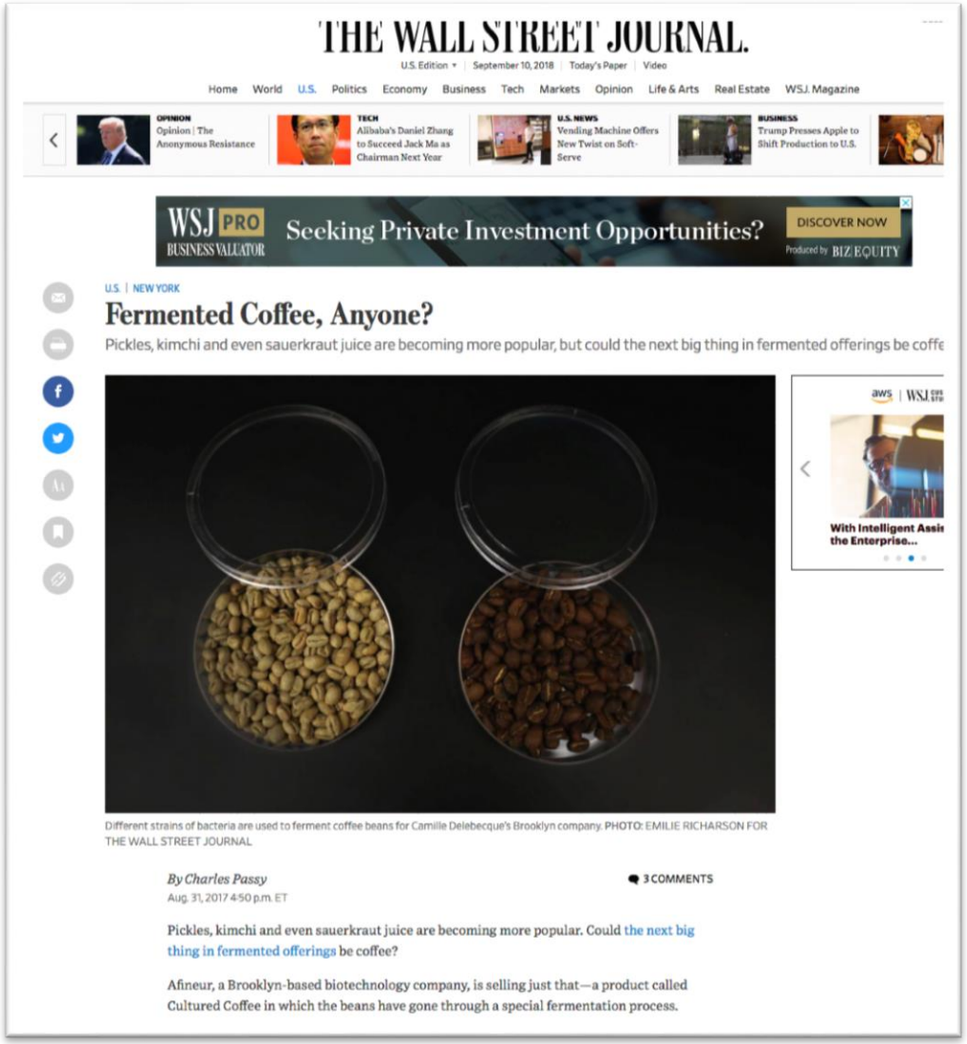
Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Precios dependen de la calificación en taza



Existe un marcado apetito por cafés cada vez de mayor calidad, con procesos de fermentación como factor diferenciador



THE WALL STREET JOURNAL.

U.S. Edition | September 10, 2018 | Today's Paper | Video

Home World U.S. Politics Economy Business Tech Markets Opinion Life & Arts Real Estate WSJ. Magazine

OPINION Opinion | The Anonymous Resistance

TECH Alibaba's Daniel Zhang to Succeed Jack Ma as Chairman Next Year

U.S. NEWS Vending Machine Offers New Twist on Soft-Serve

BUSINESS Trump Presses Apple to Shift Production to U.S.

WSJ PRO BUSINESS VALUATOR Seeking Private Investment Opportunities? DISCOVER NOW Produced by BIZEQUITY

U.S. | NEW YORK

Fermented Coffee, Anyone?

Pickles, kimchi and even sauerkraut juice are becoming more popular, but could the next big thing in fermented offerings be coffe

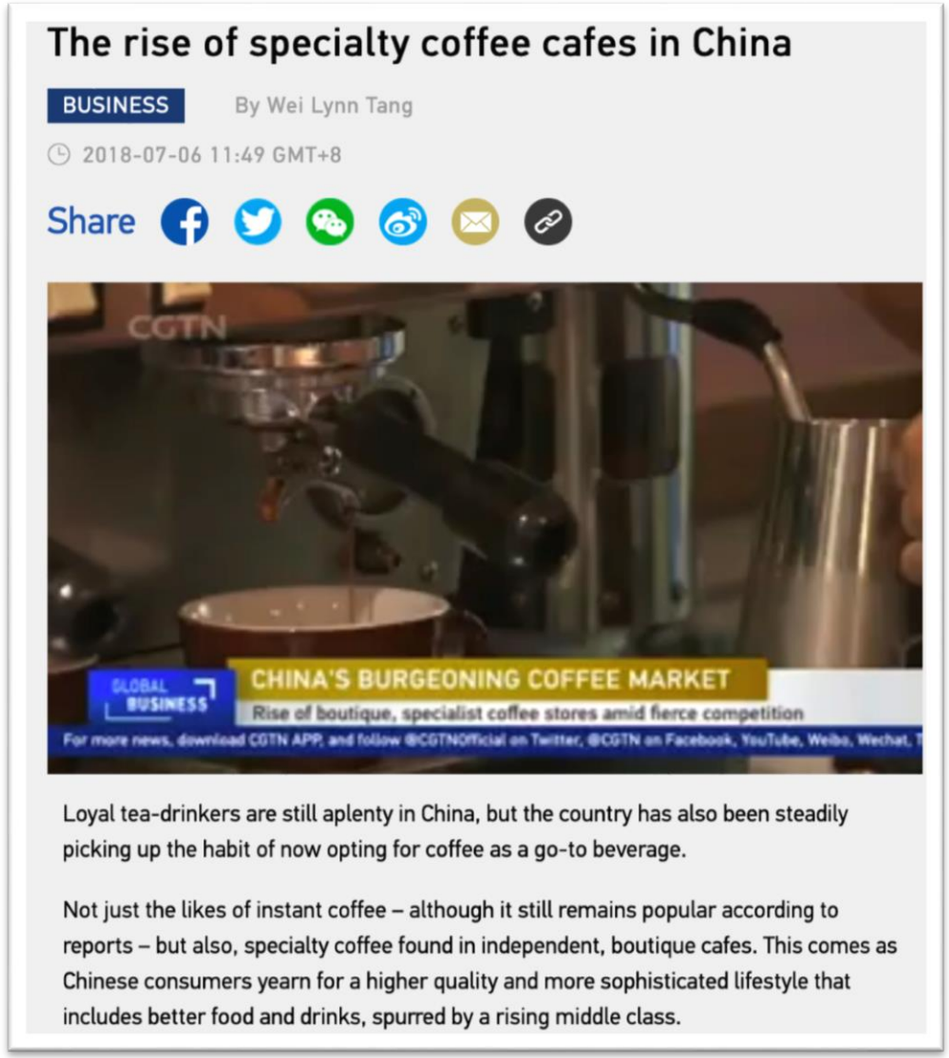
Different strains of bacteria are used to ferment coffee beans for Camille Delebecque's Brooklyn company. PHOTO: EMILIE RICHARSON FOR THE WALL STREET JOURNAL

By Charles Passy
Aug. 31, 2017 4:50 p.m. ET

3 COMMENTS

Pickles, kimchi and even sauerkraut juice are becoming more popular. Could the next big thing in fermented offerings be coffee?

Afineur, a Brooklyn-based biotechnology company, is selling just that—a product called Cultured Coffee in which the beans have gone through a special fermentation process.



The rise of specialty coffee cafes in China

BUSINESS By Wei Lynn Tang

2018-07-06 11:49 GMT+8

Share

CGTN

GLOBAL BUSINESS CHINA'S BURGEONING COFFEE MARKET

Rise of boutique, specialist coffee stores amid fierce competition

For more news, download CGTN APP, and follow @CGTNOfficial on Twitter, @CGTN on Facebook, YouTube, Weibo, Wechat,

Loyal tea-drinkers are still aplenty in China, but the country has also been steadily picking up the habit of now opting for coffee as a go-to beverage.

Not just the likes of instant coffee – although it still remains popular according to reports – but also, specialty coffee found in independent, boutique cafes. This comes as Chinese consumers yearn for a higher quality and more sophisticated lifestyle that includes better food and drinks, spurred by a rising middle class.

Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

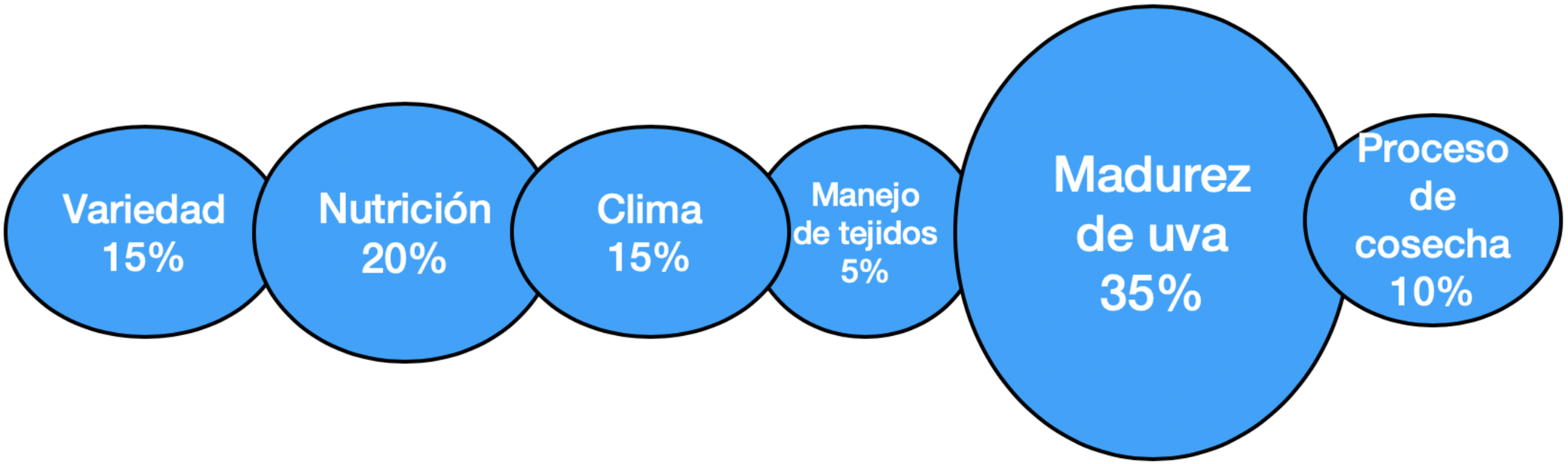
1) Como lograr un proceso estandarizado para cafes especiales que permita calificaciones de taza mas altas

Anacafé® ASOCIACION NACIONAL DEL CAFE

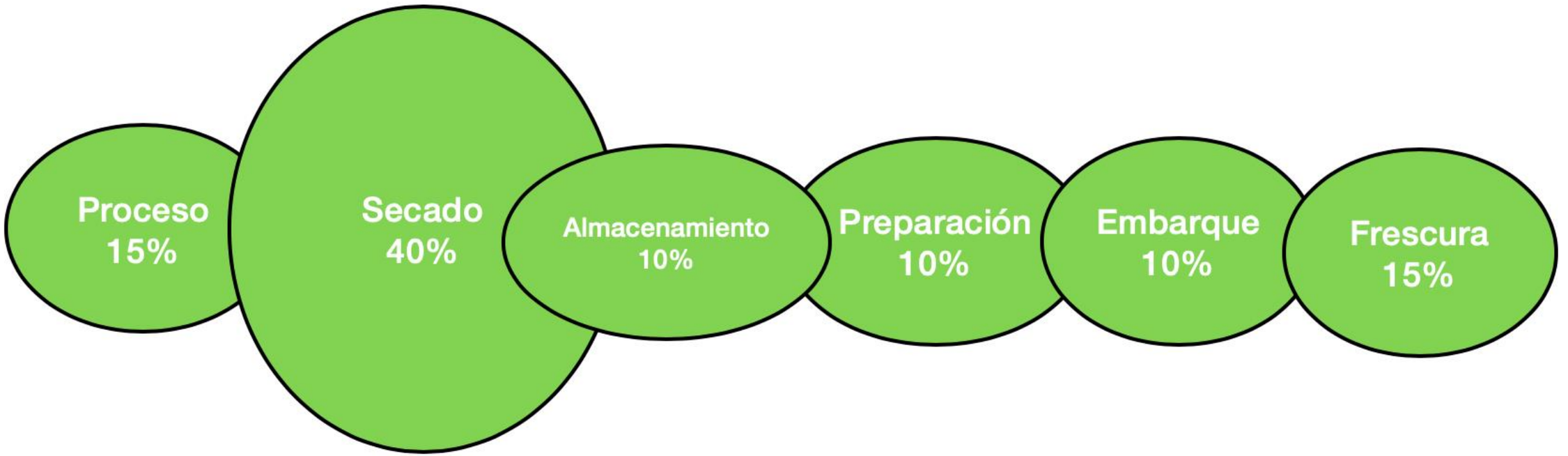
Funcafé® FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Como se logra la calidad de un Café Especial: la fórmula de K.C. O'Keefe

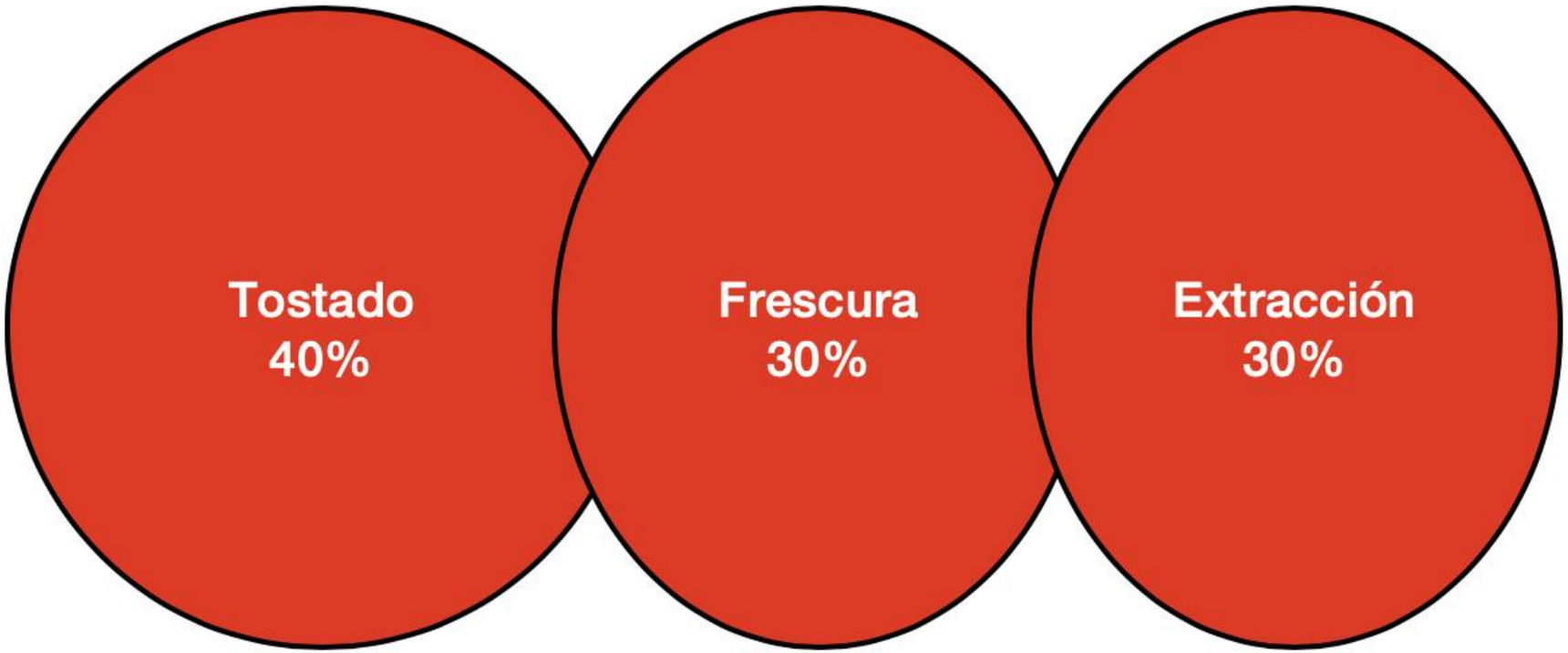
Como se logra la calidad de un Café Especial: la fórmula de K.C. O'Keefe: 1) Creación



Como se logra la calidad de un Café Especial: la fórmula de K.C. O'Keefe: 2) Conservación



Como se logra la calidad de un Café Especial: la fórmula de K.C. O'Keefe: 3) Revelación



La fórmula de O'Keefe fue actualizada en un estudio realizado por el IFT, donde la calidad de la taza está en función…

Factores Pre Cosecha - 40%

Altitud
+
Latitud
+
Topografía
+
Variedad
+
Calidad de semilla
+
Calidad de suelos

+

Fertilización
+
Irrigación/Lluvias
+
Cambio climático
+
Sombra/sol
+
Control de patógenos
+
Prácticas de cosecha - monitoreo de madurez adecuado

Factores Post Cosecha - 60%

Proceso de beneficiado - húmedo/natural/honey

"Fermentación controlada"

+

Proceso de secado

+

Proceso de almacenamiento

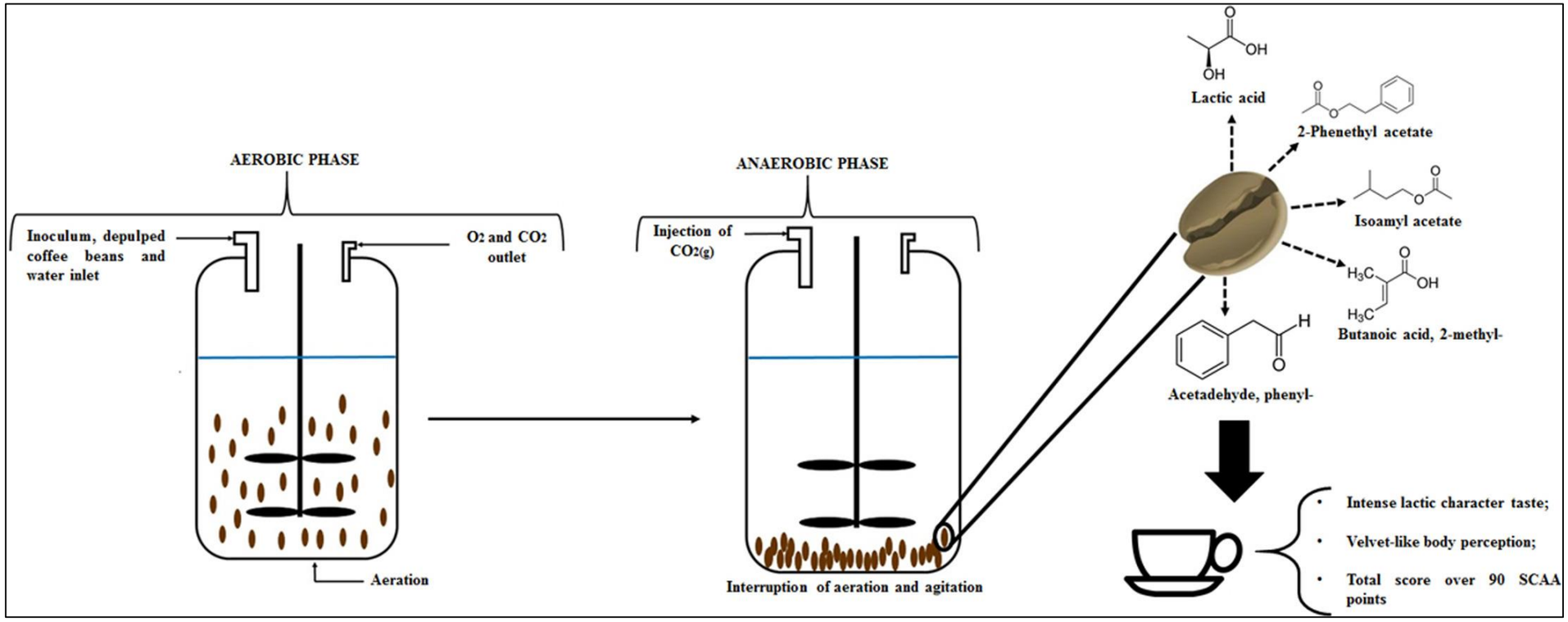
+

Proceso de tostado y molido

Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

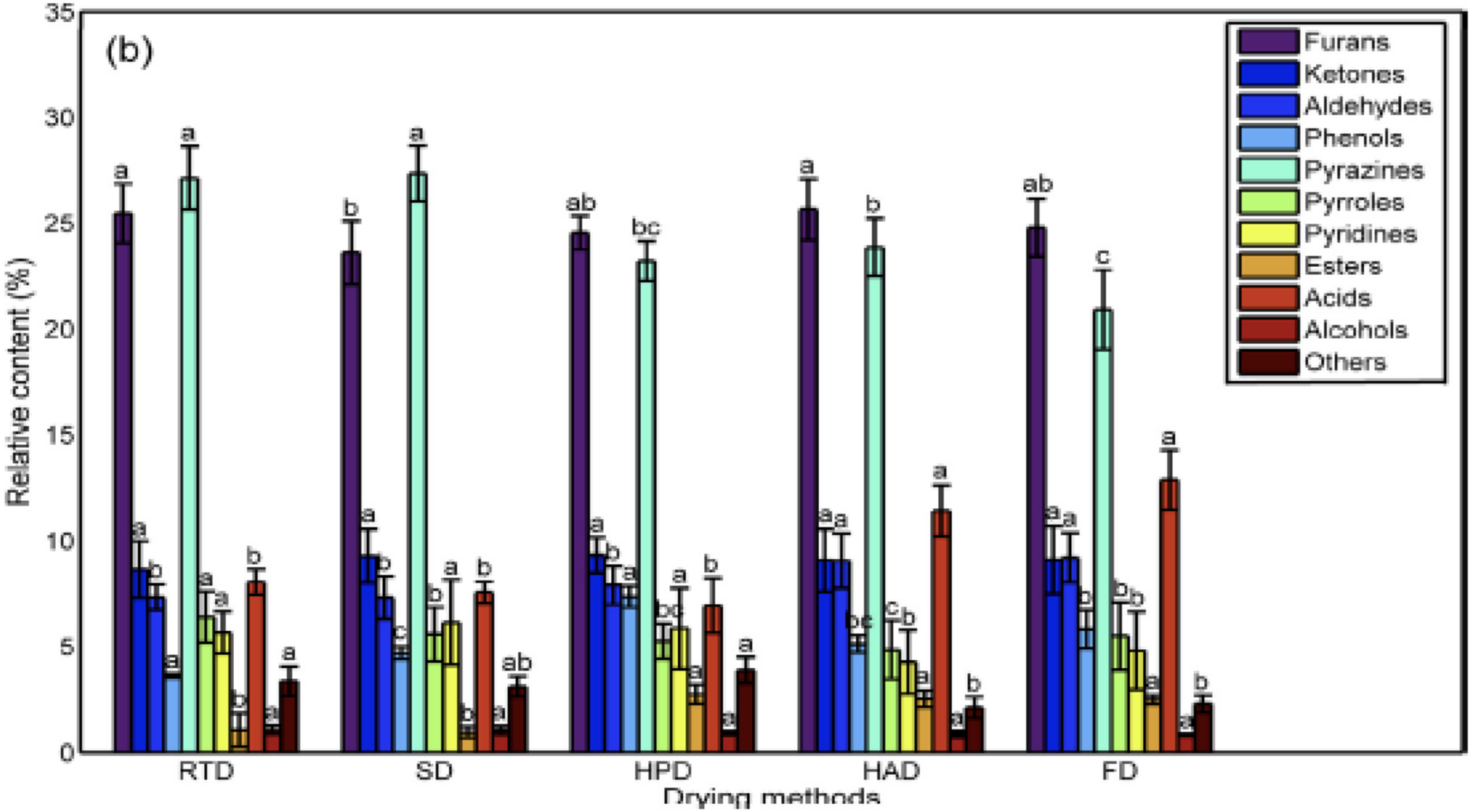
Procesos de fermentación controlada



Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Procesos de secado controlado – perfil de volátiles en café secado con diferentes métodos



Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Procesos de secado controlado – perfil de volátiles en café secado con diferentes métodos

Food Chemistry 291 (2019) 49–58

Contents lists available at ScienceDirect

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem

Impact of drying process on chemical composition and key aroma components of Arabica coffee

Fareeya Kulapichitr[a], Chaleeda Borompichaichartkul[a], Inthawoot Suppavorasatit[a], Keith R. Cadwallader[b,*]

[a] Department of Food Technology, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand
[b] Department of Food Science and Human Nutrition, University of Illinois at Champaign-Urbana, 1302 West Pennsylvania Avenue, Urbana, IL 61801, USA

ARTICLE INFO

Keywords:
Coffee
Flavor
Drying
Chemical composition
Sensory evaluation
Stable isotope dilution analysis

ABSTRACT

Influence of heat pump drying (HP at 40, 45 and 50 °C), tray drying (TD) and sun drying (SD) on the quality of Arabica coffee was evaluated. Drying process did not affect the caffeine content, but influenced levels of some amino acids. Sucrose content was higher in HP and TD than in SD green coffees. The perceived aroma of brewed coffee from SD was similar to HP, but differed from TD. Concentrations of 30 important odorants were compared for SD, HP (50 °C) and TD brewed coffees. 2-Furfurylthiol, a key odorant of coffee, was at the same level in SD and HP coffees and lowest in TD samples. Principal component analysis (PCA) separated SD from HP and TD, based on the concentrations of 23 odorants. Combined results of sensory and chemical analyses showed that in comparison to SD, HP was superior to TD for preserving overall flavor quality.

1. Introduction

Globally, coffee is the second most traded commodity after petroleum. Total world coffee consumption was estimated at > 9 million tons in 2015–2016 with a consign close to US$21 billion (ICO, 2017). Much of the increase in demand can be attributed to the coffee's flavor and other desirable effects associated with its consumption (De Melo Pereira et al., 2019; Dong, Hu, Chu, Zhao, & Tan, 2017, 2019). Among the various types of coffees, Arabica coffee (*Coffea arabica*) dominates the world coffee market (70–80% market share) (Belitz, Grosch, & Schieberle, 2009) and is preferred over other coffee species because of its superior sensory properties (Belitz et al., 2009).

Processing methods and associated variables depend on the geographic location and the climate where coffee is produced and are important factors in determining coffee quality; however, the influence of these factors on the final quality of coffee is still not well understood (De Melo Pereira et al., 2019). Among the many processing operations, drying is one of the most important post-harvest processing steps that should to be considered, since coffee subjected to any processing method must be dried to a final water content of < 12% to inhibit microbial spoilage and prevent chemical deterioration during storage and distribution (Belitz et al., 2009; De Melo Pereira et al., 2019; Dong et al., 2017; Flament, 2002).

The choice of the drying technique used is dependent on economic factors and/or the type of processing methods employed, which further influences the physicochemical properties of green coffee beans and subsequently the crop quality. Coffee drying can be performed by sun drying (SD) or by using various mechanical drying techniques (De Melo Pereira et al., 2019).

Sun drying (SD) is commonly used by the industry; however, there are some drawbacks, such as prolonged drying time, high labor cost and the requirement for a large surface area for drying. Even with these drawbacks, SD is usually preferred over mechanical drying since SD tends to produce roasted coffees with superior sensorial properties. This is due in part to the higher contents of sugars formed by pre-germination of the seed embryo during SD and because mechanical drying at high temperatures may adversely affect the structure of green coffee and overall final quality of coffee (Borem, Marques, & Alves, 2008; Dong et al., 2017). Despite the potential impact of drying method, there is a general lack of comprehensive studies related to how various drying procedures affect coffee quality and, in particular, final brewed coffee flavor.

Heat pump drying (HP) has been widely reported as an energy efficient process for drying operations (Dong et al., 2017, 2019; Goh, Othman, Mat, Ruslan, & Sopian, 2011). The closed drying system of HP is comprised of efficient heating and cooling systems, which enable

* Corresponding author.
E-mail addresses: fareeya.k@student.chula.ac.th (F. Kulapichitr), Chaleeda.B@chula.ac.th (C. Borompichaichartkul), Inthawoot.S@chula.ac.th (I. Suppavorasatit), cadwlldr@illinois.edu (K.R. Cadwallader).

https://doi.org/10.1016/j.foodchem.2019.03.152
Received 19 November 2018; Received in revised form 26 March 2019; Accepted 31 March 2019
Available online 01 April 2019

Influence of heat pump drying (HP at 40, 45 and 50 °C), tray drying (TD) and sun drying (SD) on the quality of Arabica coffee was evaluated. Drying process did not affect the caffeine content, but influenced levels of some amino acids. Sucrose content was higher in HP and TD than in SD green coffees. The perceived aroma of brewed coffee from SD was similar to HP, but differed from TD. Concentrations of 30 important odorants were compared for SD, HP (50 °C) and TD brewed coffees. 2-Furfurylthiol, a key odorant of coffee, was at the same level in SD and HP coffees and lowest in TD samples. Principal component analysis (PCA) separated SD from HP and TD, based on the concentrations of 23 odorants. Combined results of sensory and chemical analyses showed that in comparison to SD, HP was superior to TD for preserving overall flavor quality.

"Resultados combinados de evaluaciones sensoriales y análisis químicos muestran que en comparación el café secado en deshidratadores con bombas de calor tuvo características superiores al secado al sol y a temperatura ambiente, para preservar la calidad el sabor"

Anacafé® ASOCIACION NACIONAL DEL CAFE

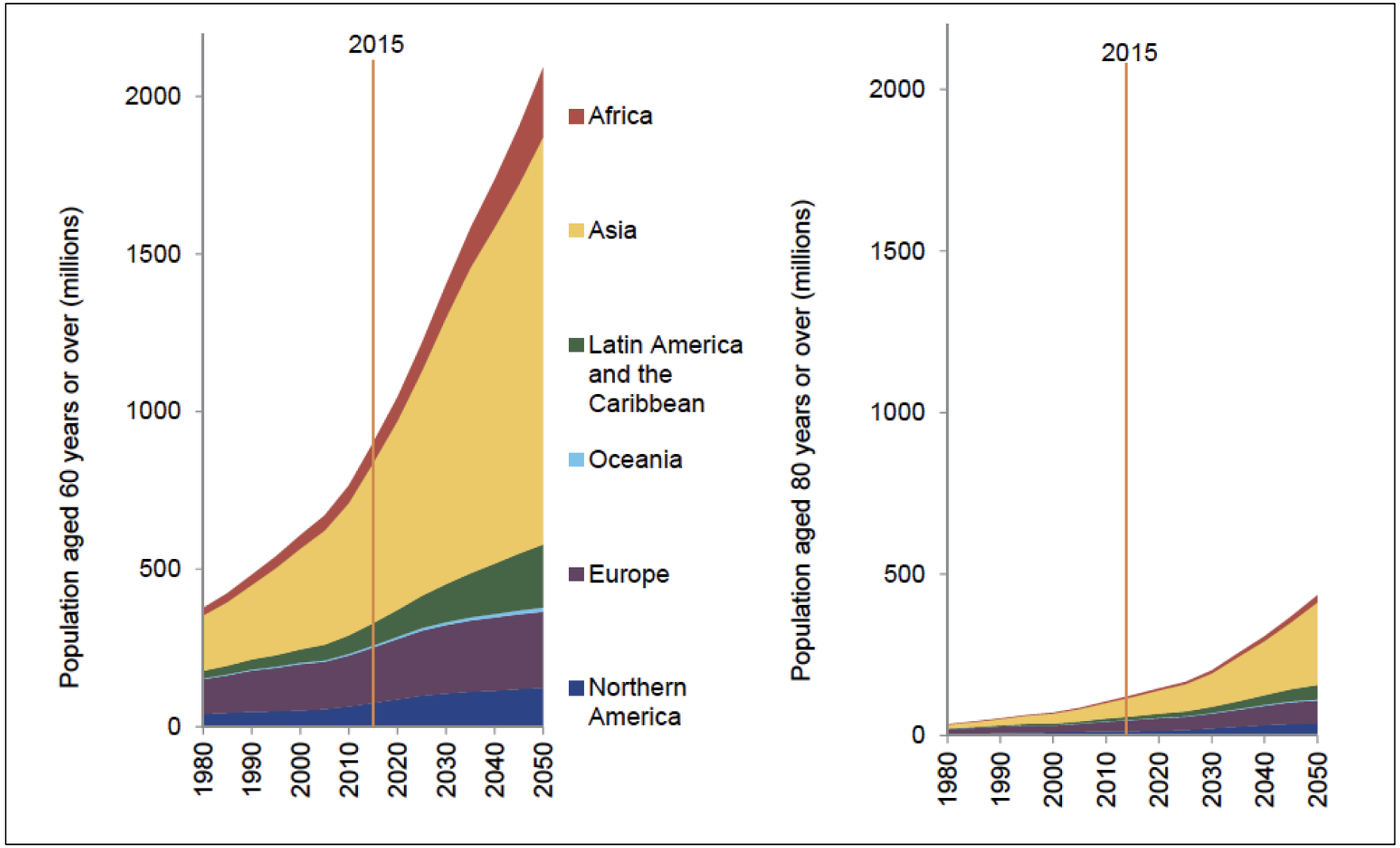
Funcafé® FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

2) Como diversificar la oferta de nuestros productos en base a café

Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

A nivel global, la población está envejeciendo rápidamente…y con ello está incrementando su demanda por productos que mejoren su calidad de vida



Esto ha disparado una carrera por productos antioxidantes que combatan enfermedades relacionadas a la vejez, y otras afecciones. Los polifenoles y dentro de ellos, los ácidos clorogénicos del café son de las fuentes mas apetecidas por este mercado

U.S. and Europe Polyphenol Market to Reach $584.91 Bn by 2025 at 5.0% CAGR, Says AMR

NEWS PROVIDED BY
Allied Market Research →
Jan 16, 2019, 05:45 ET

SHARE THIS ARTICLE

PORTLAND, Oregon, January 16, 2019 /PRNewswire/ --

Surge in geriatric population across developing and developed countries, increase in health awareness, and rise in preference for herbal products over synthetic counterparts would boost the growth of the U.S. and Europe polyphenol market.

Allied Market Research published a report, titled, **"U.S. and Europe Polyphenol Market by Type (Apple, Green Tea, Grape Seed, Maracuyá/Passion Fruit, and Others), Application (Functional Beverages, Functional Foods, Dietary Supplements/Nutraceuticals, and Others): Opportunity Analysis and Industry Forecast, 2018-2025."** The research provides detailed analysis of the industry dynamics, key market segments, market size & estimations, top investment pockets, and competitive landscape. According to the report, the U.S. and Europe polyphenol market accrued $392.47 billion in 2017 and is expected to garner $584.91 billion by 2025, growing at a CAGR of 5.0% from 2018 to 2025.

Growth in elderly population worldwide coupled with rise in health awareness and increase in adoption for herbal products drive the growth of the market. However, intricate processes of manufacturing and stringent regulations related to approval of polyphenols hamper the market growth. On the other hand, increase in applications of polyphenol would create new opportunities in the market in near future.

Demand For Chlorogenic Acid Market Is Growing At Exponential Rate By 2023 | Key Players: (Indfrag, Cymbio Pharma, Changsha E.K HERB Co., Ltd., Nutragreen Biotechnology, Changsha Nulant Chem)

June 7, 2019 6 Min Read

HTF Market

Share This!

HTF MI has added the report on Global Chlorogenic Acid Market for the forecast till 2025, the report comprises of the estimation of the Global Chlorogenic Acid Market. The following Industry is shown to progress with a noteworthy rise in the Compound Annual Growth Rate (CAGR) during the forecast period owing to various factors driving the market. Some of the key players mentioned in this research are "Naturex, Applied Food Sciences, EUROMED SA, Zhejiang Skyherb, Nanjing Zelang, Indfrag, Cymbio Pharma, Changsha E.K HERB Co., Ltd., Nutragreen Biotechnology, Changsha Nulant Chem Co., Ltd, Changsha staherb natural ingredients co.,ltd, Xi'an Hao-xuan Bio-tech Co., Ltd, FLAVOUR TROVE & Chenguang Biotech", etc.

The generated report is firmly based on primary research, interviews with top executives, news sources and information insiders. Secondary research techniques are implemented for better understanding and clarity for data analysis.

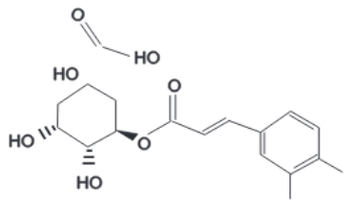
The scope of the report extends from market scenarios to comparative pricing between major players, cost and profit of the specified market regions. The numerical data is backed up by statistical tools such as SWOT analysis, Porter's Five Analysis, PESTLE analysis and so on.

Browse TOC and Charts and Tables ofGlobal Chlorogenic Acid Market Research Report available at: https://www.htfmarketreport.com/reports/1290381-2013-2028-report-on-global-chlorogenic-acid-market

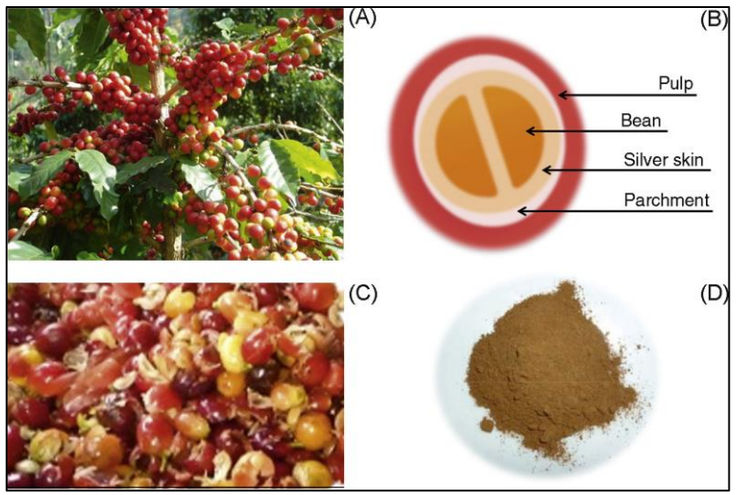
Company Profiles Naturex, Applied Food Sciences, EUROMED SA, Zhejiang Skyherb, Nanjing Zelang, Indfrag, Cymbio Pharma, Changsha E.K HERB Co., Ltd., Nutragreen Biotechnology, Changsha Nulant Chem Co., Ltd, Changsha staherb natural ingredients co.,ltd, Xi'an Hao-xuan Bio-tech Co., Ltd, FLAVOUR TROVE & Chenguang Biotech
Global Chlorogenic AcidMarket by Types: , Honeysuckle Extract (HPLC 5%-20%), Honeysuckle Extract (HPLC 98%), Eucommia Extract (HPLC 5%-30%), Eucommia Extract (HPLC 50%-90%), Eucommia Extract (HPLC 98%) & Green Coffee Bean Extract (HPLC 45%-50%)
Global Chlorogenic AcidMarket by Applications: Supplements, Pharmaceuticals, Cosmetics & Others

Los ácidos clorogénicos en café

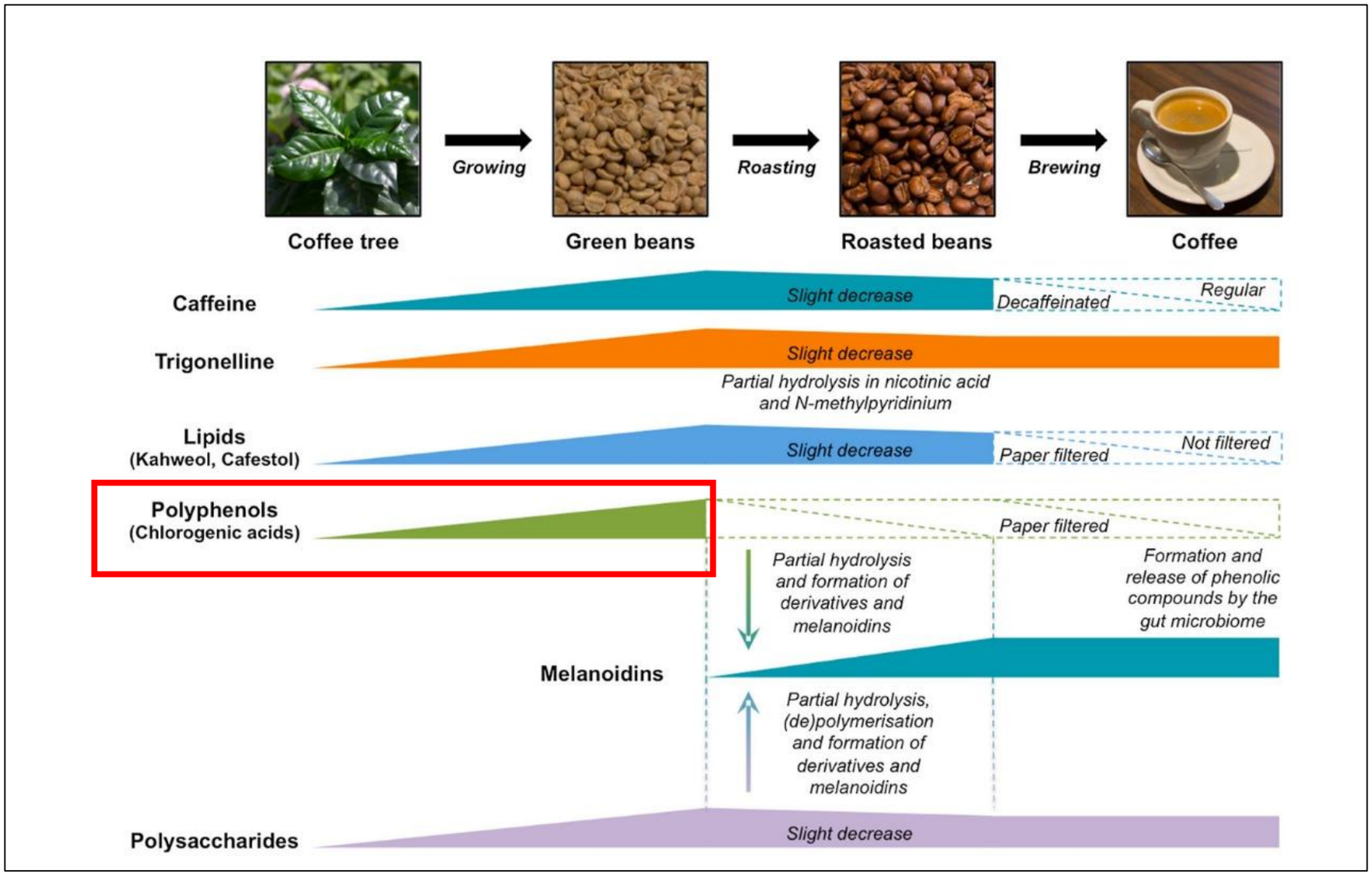
Los ácidos clorogénicos (CGA), del inglés *chlorogenic acids*, comprenden varios ácidos hidroxicinámicos (cafeico, ferúlico, cumárico, sinápico) esterificados con el ácido quínico.

Clorogénico 5-cafeoíl-quínico 5-CQA	$C_{16}H_{18}O_9$ 1,4,5-Trihydroxi-ciclohexano carboxílico 3-(3,4-dihidroxicinamato) 3-[[3-(3,4-Di-hidroxifenil)-1-oxo-2-propenil]oxi]-1,4,5-tri-hidroxiciclohexano-carboxílico		Café, arándanos, manzana, cidra. Es el ácido fenólico más abundante en el café

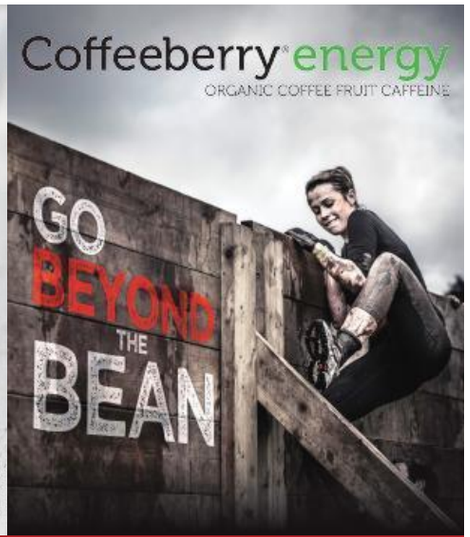
Los ácidos clorogénicos en el mercado, dependiendo de su concentración, pueden tener precios de hasta US$300/100 gms. En pulpa deshidratada (que es donde hay mayor concentración), el precio de la pulpa puede tener de US$5-15/lb, dependiendo de su calidad microbiológica

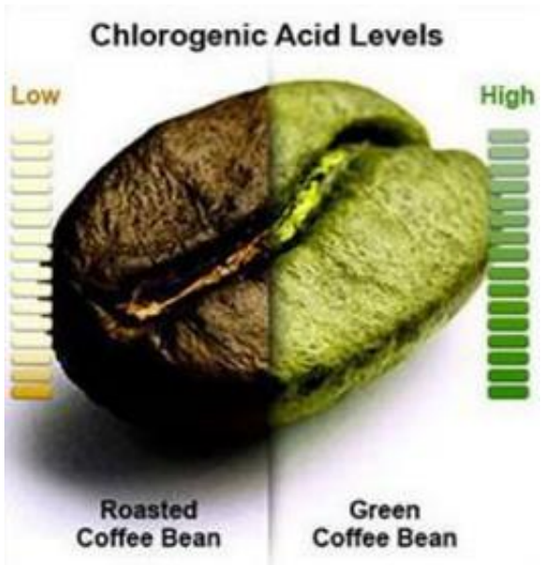


La pulpa deshidratada contiene altos niveles de ácidos clorogénicos, aunque de igual manera el café verde fermentado adecuadamente



Se está desarrollando un mercado muy atractivo en el sector de bebidas funcionales…





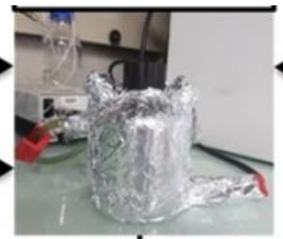
Anacafé® ASOCIACION NACIONAL DEL CAFE
Funcafé® FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Proceso de producción de ácidos clorogénicos vía fermentación en estado sólido de pulpa

Pulpa café

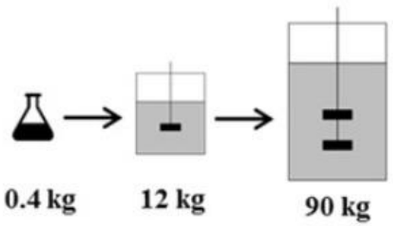
Molienda

Fermentación estado sólido

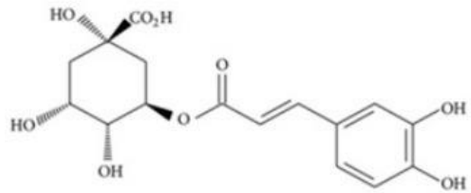


Estabilización de pulpa

- → Sulfite
- → Acetic acid
- → Ascorbic acid



Extracción de ácidos clorogéncios – agua a alta T/alta presión



Molécula de alto valor en la industria de nutraceúticos, de alimentos y bebidas

Anacafé ASOCIACION NACIONAL DEL CAFE

Funcafé FUNDACION DE LA CAFICULTURA PARA EL DESARROLLO RURAL

Algunos comentarios y conclusiones…

- Si la industria cafetalera centroamericana decide competir en base a calidad (ya los panameños lo están haciendo con bastante éxito), debemos implementar cambios dramáticos en nuestros procesos productivos y de manufactura, que nos permitan precios diferenciados sustanciales a través de productos con calidad en taza

- Los procesos de fermentación controlada y de secado controlado son garantías para el consumidor, y abren la posibilidad de crear posicionamientos en el mercado con un producto de altísima calidad, que el consumidor está dispuesto a pagar

- Los procesos estandarizados de secado y fermentado permiten desarrollar “upsides” en el modelo tradicional de ingresos para un productor de café: pulpa deshidratada, concentrados de café, concentrados de ingredientes activos (polifenoles / ácidos clorogénicos) de alto valor en el mercado de nutraceúticos

- Debemos desarrollar estructuras/organizaciones/instituciones de investigación y desarrollo que nos permitan tener acceso tecnologías y conocimiento para darle resiliencia al sector productor de café, y realmente una estrategia sólida basada en innovación que crea valor

Muchas Gracias!

Anacafé®
ASOCIACION NACIONAL DEL CAFE

Funcafé®
FUNDACION DE LA CAFICULTURA
PARA EL DESARROLLO RURAL

Rubén Darío Sorto

Ruben.sorto@yparconsulting.com

Ruben.sorto@fortunespecialtycoffee.com

(504) 9442-2601 / (504) 9455-6772

Anacafé®
ASOCIACION NACIONAL DEL CAFE

Funcafé®
FUNDACION DE LA CAFICULTURA
PARA EL DESARROLLO RURAL