



## Next Generation Food Supplements

### Our Core-Business

bioXtract is a B to B/private label developer and manufacturer of innovative **food supplements** or **active ingredients** for pharmaceutical and food supplement industries for Belgian and export Markets.

These active ingredients are presented in the form of **formulated extracts** that can be used as ingredients for the manufacture of food supplements, but also as **ready-to-use finished dosage forms** in private label (capsules or tablets, in bulk or in blister and complete packaging under our customers' brand) .

The elaborate extracts are **standardized** in natural active ingredients rigorously selected for their activities in **specific pathologies** (arthritis, metabolic syndrome, allergic rhinitis, IBS and gastrointestinal disorders, inflammatory diseases ...).

Based on his know-how in the field of quality systems, industrial scale-up and registration processes, **bioXtract** design food supplements or active formulated ingredients from the selection of raw materials until the industrial manufacture of finished products.

### Our Quality

The logistic/manufacture facility of **bioXtract** is **registered and approved by the AFSCA** (Federal Agency for the Food Chain Safety) for food supplement production under the Registration Number AER/NAM/004889 since 2006.

**bioXtract** disposes of a validated **Self-Inspection System** (SIS) which ensures the respect of requirements linked to the food safety.

**bioXtract** is **FSSC22000 certified**, which is a certification scheme for food safety systems including ISO 22000:2005, ISO 22002-1:2009 and additional FSSC 22000 requirements

**bioXtract** is **GMP certified** according to NSF/ANSI Standard 173, Section 8 dedicated to dietary supplements for both our laboratory and logistic/manufacture premises.

A global Quality Manual is available upon request for more complete information

### Our Products

**bioXtract** has acquired a particular know-how of over 10 years in the development and management of products based on the active ingredient "**curcumin**" and is the leader in Belgium for this asset, having developed several innovative and highly bioavailable curcumin formulations (patented).

Finished dosage form (capsules):

- **Arantal®** a remedy for chronic treatment of **osteoarthritis** and **inflammatory diseases**
- **Nasaler®** a natural remedy for the symptoms of **allergic rhinitis**, offering symptomatic relief with long term immunomodulating activity
- **Rifencin®** a natural remedy for the relief of gastrointestinal disorders like Irritable **Bowel Disease (IBD)** or **Irritable Bowel Syndrome (IBS)**

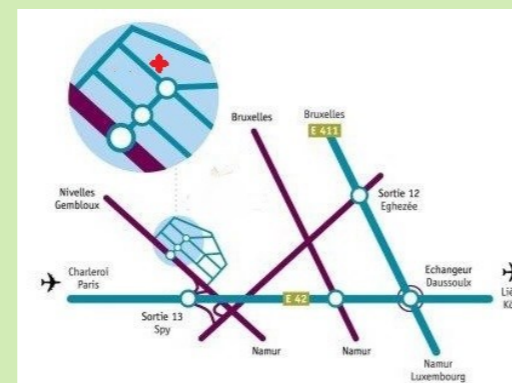
Bulk ingredient:

**Curzol®**, a pre-formulated powdered ingredient for the manufacture of food supplements with **anti-inflammatory actions**.

**bioXtract's** innovative range of dietary supplements also includes:

- **Regulid Plus** acting on the **weight stabilization** in yo-yo dieting syndrome as well as on blood HDL and triglyceride level management, acting as a natural treatment of the **metabolic syndrome**
- **Cognityl**, associating theobromin from cocoa and cafein from tea for **concentration and mental energy**

*Both are available in the form of bulk formulated ingredient or in the form of finished dosage forms.*



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# COGNITYL® BOOST BRAIN POWER AND MEMORY

## Innovative Composition

- ✓ Improves intellectual performance and concentration.
- ✓ Quick action, no side effects, no caffeine high.
- ✓ Unique dosage of natural theobromine and caffeine from cocoa.
- ✓ Use to maintain mental alertness and stay efficient at work or study.



# COGNITYL®

## Cognityl®: Natural Solution for Cognitive Performance

**Cognityl®** is an innovative **herbal supplement for concentration**, associating highly active xanthines (caffeine and theobromine) in well defined ratio and concentrations for an optimal action on **intellectual fatigue** and **exhaustion**.

**Cognityl®** improves mental energy (concentration, motivation, cognition, well-being and alertness) and reduces physical fatigue specifically at the level of muscular cells.

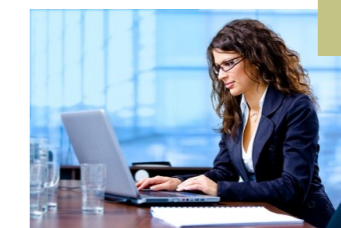
Herbal supplement **Cognityl®** contains cocoa extract and supercritical tea extract, and is standardized in theobromine and caffeine in form of tablets of 805 mg.

Each tablet contains 250 mg of theobromine and 19 mg of caffeine.

Recommended usage is 1 tablet a day before a meal with a large glass of water.



CONCENTRATION  
ALERTNESS  
ENERGY  
WELL-BEING



INFORMATION PROCESSING  
REACTION TIME  
MEMORIZATION



EFFICIENCY

## Theobromine and caffeine: psycho-pharmacologically actives of cocoa

Methylxanthines are derived from a purine base (xanthine) found in most body tissues and fluids and in other organisms.

The two major methylxanthines found in plants are caffeine (in coffee, guarana, mate and tea) and theobromine (in cocoa and mate). Theophylline is also found naturally in tea as trace (~1 mg/l).

Coffee, tea and cocoa are ancient beverages with traditional use. Coffee and tea are well known as mild stimulant drinks all over the world whereas cocoa is famous for its hedonic and behavioural effects.

Everybody knows that caffeine is the active ingredient of coffee and tea. But for cocoa derived products, the determination of the psychostimulant active ingredient is unclear. The scientists hesitated between polyphenols, anandamine, different amines as salsolinol, or xanthines. Smit<sup>1</sup> demonstrated in 2004 that the therapeutically active molecules

of cocoa were the methylxanthines (theobromine + caffeine).

The psychostimulant properties of xanthines are due to their ability to interact with the neurotransmission in different regions of the brain, thereby promoting behavioural functions, such as vigilance, attention, mood and arousal<sup>2</sup>.

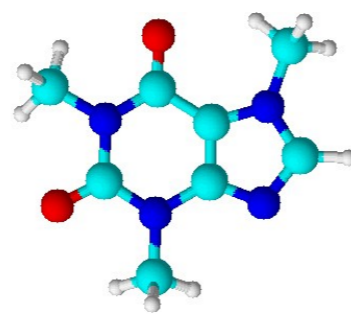
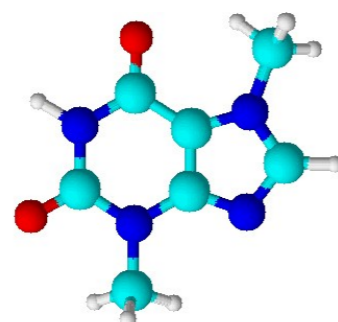
It is now well established that under normal psychological conditions, the effects exerted in the brain by methylxanthines depend on their ability to act as an antagonist at different adenosine receptors<sup>3</sup>.

Adenosine is an ubiquitous neuromodulator that acts at four G-protein-coupled receptors (A<sub>1</sub>, A<sub>2A</sub>, A<sub>2B</sub> and A<sub>3</sub>). The major adenosine receptors implicated in arousal performance are A<sub>1</sub> and A<sub>2A</sub>. Pharmacological studies indicate that the CNS effects of methylxanthines are mediated particularly by their antagonistic actions at the A<sub>1</sub> and A<sub>2A</sub> subtypes of the adenosine receptors<sup>4</sup>.

The methylxanthines also interact with other central receptors, such as β<sub>1</sub>-adrenergic (cortex), β<sub>2</sub>-adrenergic (cerebellum), 5-HT<sub>1</sub> and 5-HT<sub>2</sub> serotonin (cortex), muscarinic (cortex), nicotinic (cortex), GABA A (cortex), Ca<sup>2+</sup> channel (cortex)<sup>5</sup>. The action of methylxanthines is central but also peripheral; they modulate calcium in the skeletal muscle during fatigue<sup>6</sup>. During fatigue, the leakage and the recapture of calcium is attenuated within the muscle fibres.

Methylxanthines have behavioural and stimulant effects; the difference of affinity of their receptors implies different therapeutic activities. The challenge is to get the right amount and ratio of theobromine and caffeine to deliver the optimal effect.

**COGNITYL**<sup>®</sup>, due to its optimized content in methylxanthines, offer the best ratio for improving cognition without over-excitement of the CNS.



## Clinical Efficacy of Cognityl<sup>®</sup>

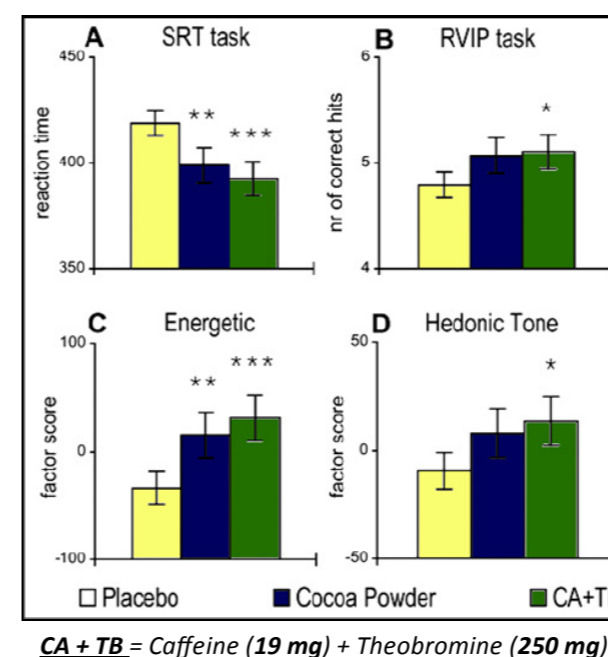
**COGNITYL**<sup>®</sup>'s composition has been inspired by Smit's experiments<sup>1,8</sup>.

Smit *et al.* have proven in a clinical trial in 2004 that an oral dose of 250 mg of theobromine and 19 mg of caffeine helps people to concentrate, feel energetic, and develop a feeling of well-being and pleasure.

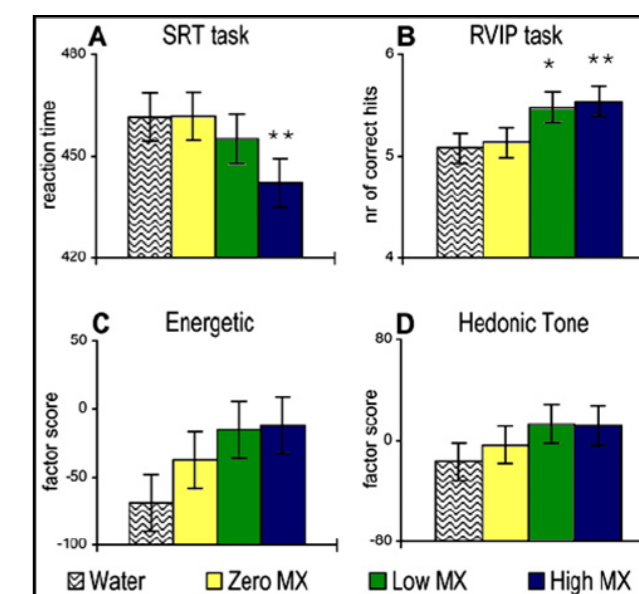
The effects of cocoa constituents (caffeine and theobromine) were tested on mood and performance and the activity compared to that of the same amount of xanthines found in cocoa powder and to placebo.

The profile of effects of cocoa powder containing methylxanthines and the methylxanthines alone were found to be identical: an increase in energetic arousal and hedonic tone, performance improvements on simple reaction time and information processing, all this compared to placebo (see following figures).

With this study, it was concluded that theobromine and caffeine were responsible for the psychopharmacological activity of chocolate.



**SRT** = Simple Reaction Task  
**RVIP** = Rapid Visual Information Processing



**Zero MX** = Placebo (Chocolate w/o xanthines)  
**Low MX** = Chocolate with Caffeine / Theobromine (8 / 100 mg)  
**High MX** = Chocolate with Caffeine / Theobromine (20 / 250 mg)

