VITAMIN B STABILITY OF DRIED BEE POLLEN DURING STORAGE

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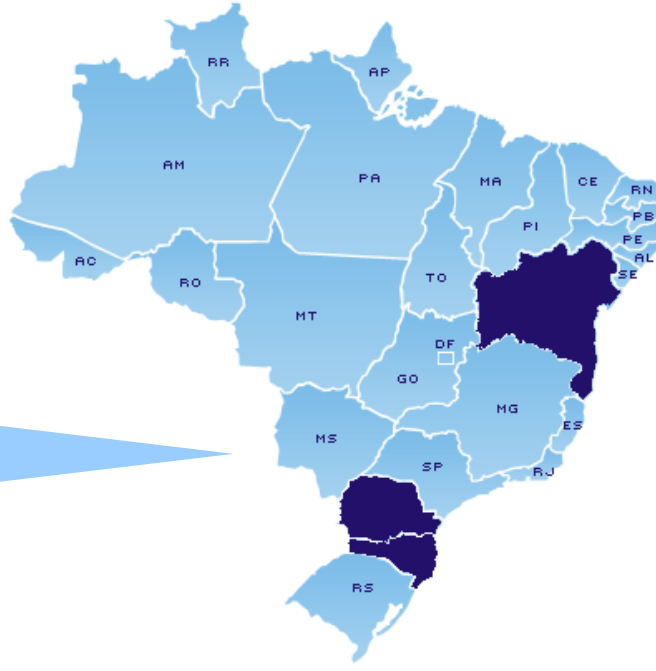
Countries which has bee pollen regulation:

- Argentina
- Armenia
- Bulgaria
- Brazil
- China
- Cuba
- Poland
- Russia
- Switzerland
- Turkey
- Uruguay

BRAZIL

Production of 200 ton/year



Bee pollen production

Collect.....

⇩

Freeze

⇩

Dehydration.....

⇩

Cleaning

⇩

Package.....

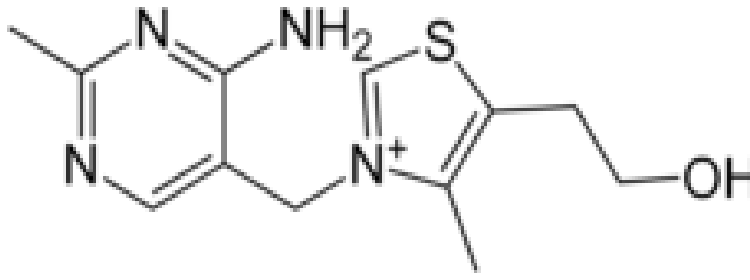
Bee pollen collect

Vitamins studied:

(water-soluble vitamins of the B complex)

Vitamin B_1 (Thiamin)

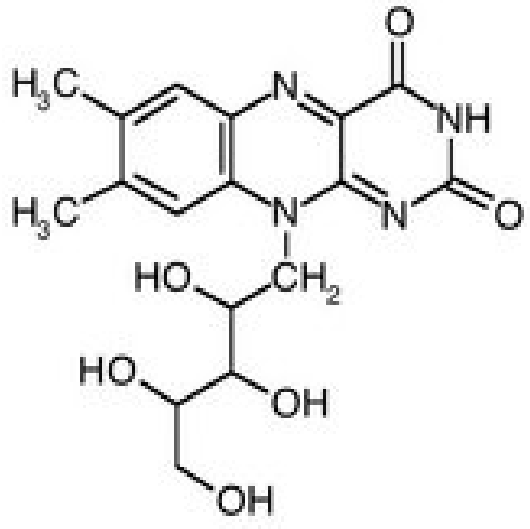
eficiency = beriberi
neurological and cardiovascular disease)



Vitamin B_2 (Riboflavin)

deficiency = ariboflavinosis

(include cracked and red lips,
inflammation of the lining of mouth)

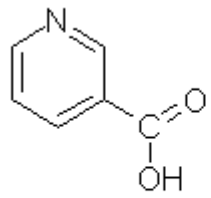


Vitamins studied:

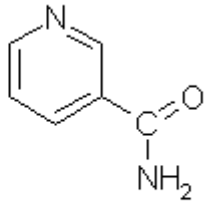
(water-soluble vitamins of the B complex)

Vitamin B_3 (PP or niacin)

eficiency = pellagra
diarrhea, dermatitis and dementia)



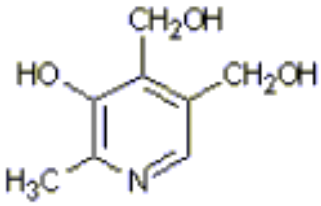
Nicotinic acid



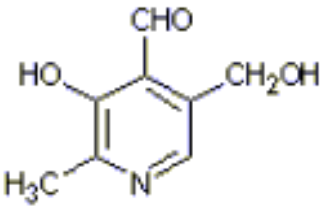
Nicotinamide

Vitamin B_6 (Piridoxine)

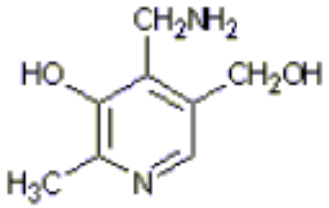
3 isomers



Piridoxine



Piridoxal



Piridoxamine

Material and Methods

Material

- 07 Batches of bee pollen from Sao Paulo, Brazil were collected using 15 bee hives (*Apis mellifera*) and were kept at room temperature (with and without light exposure) an in freezer

Methods

- Simultaneous extraction (Moreschi, 2006; Presoto and Almeida-Muradian 2008)

HPLC:

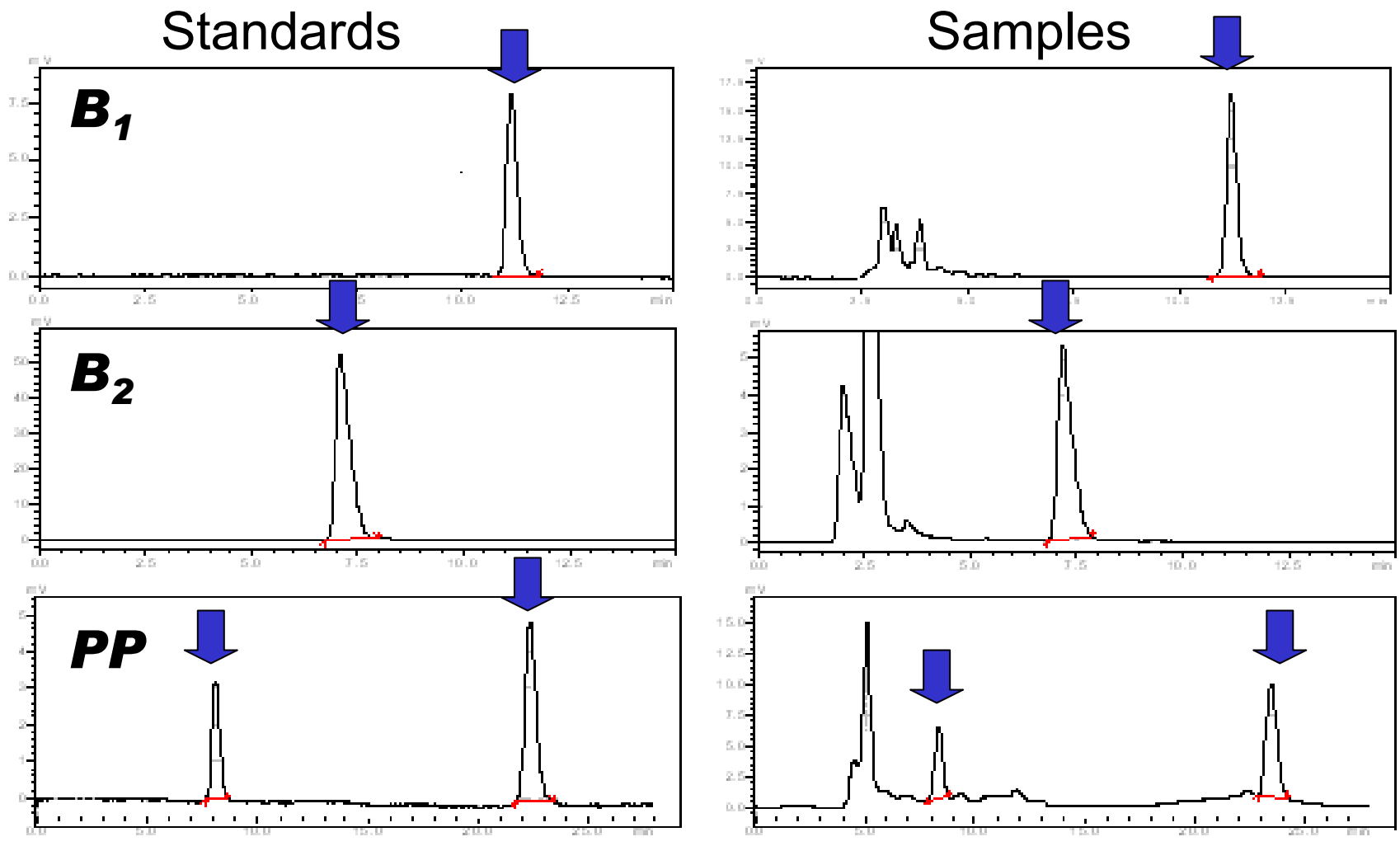
Vitamin B_1 (pre-column reaction): Mobile phase: phosfate buffer pH 7.2 and dimethylformamide; Column: C_{18}; fluorescence detection (Ex 368 nm; Em 440 nm)

Vitamin B_2: Mobile phase: phosfate buffer pH 7.2 and dimethylformamide; Column: C_{18}; fluorescence detection (Ex 450 nm; Em 530 nm)

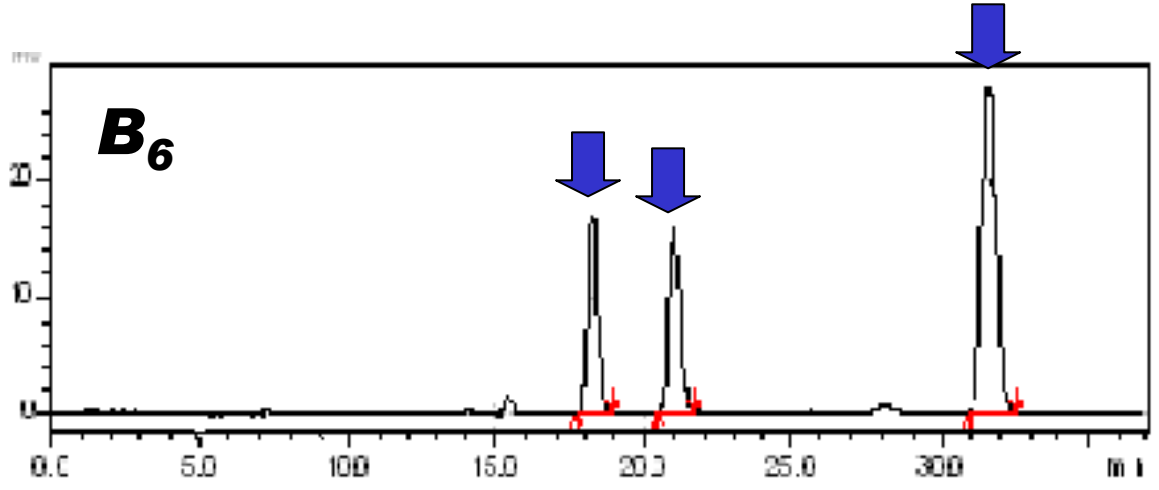
Vitamin PP (post-column reaction): phosfate buffer with hidrogen peroxide and copper sulphate, cobre; Column: C_{18} ; fluorescence detection (Ex 322nm;
Em 380 nm)

Vitamina B_6: phosfate buffer with pH 2.5 with ion par and acetonitrile: Column: C_{18}; fluorescence detection (Ex 296nm; Em 390 nm)

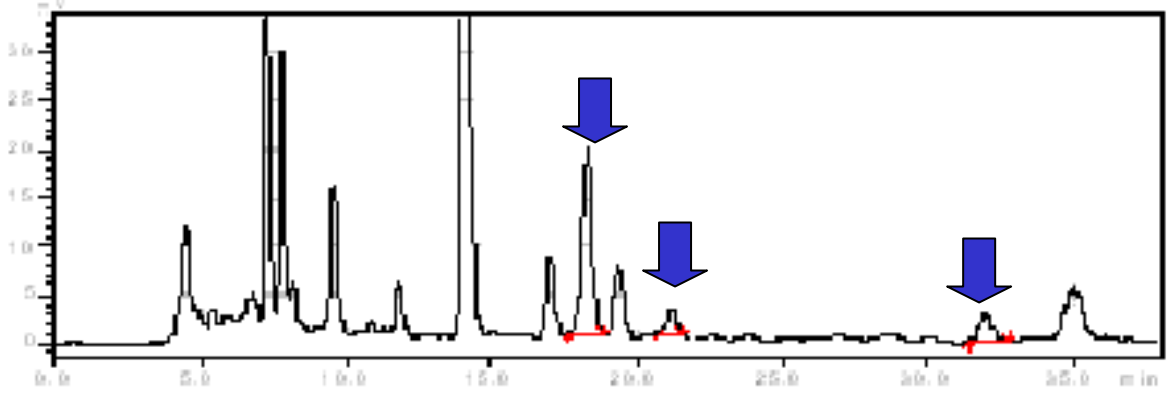
Chromatograms



Chromatograms

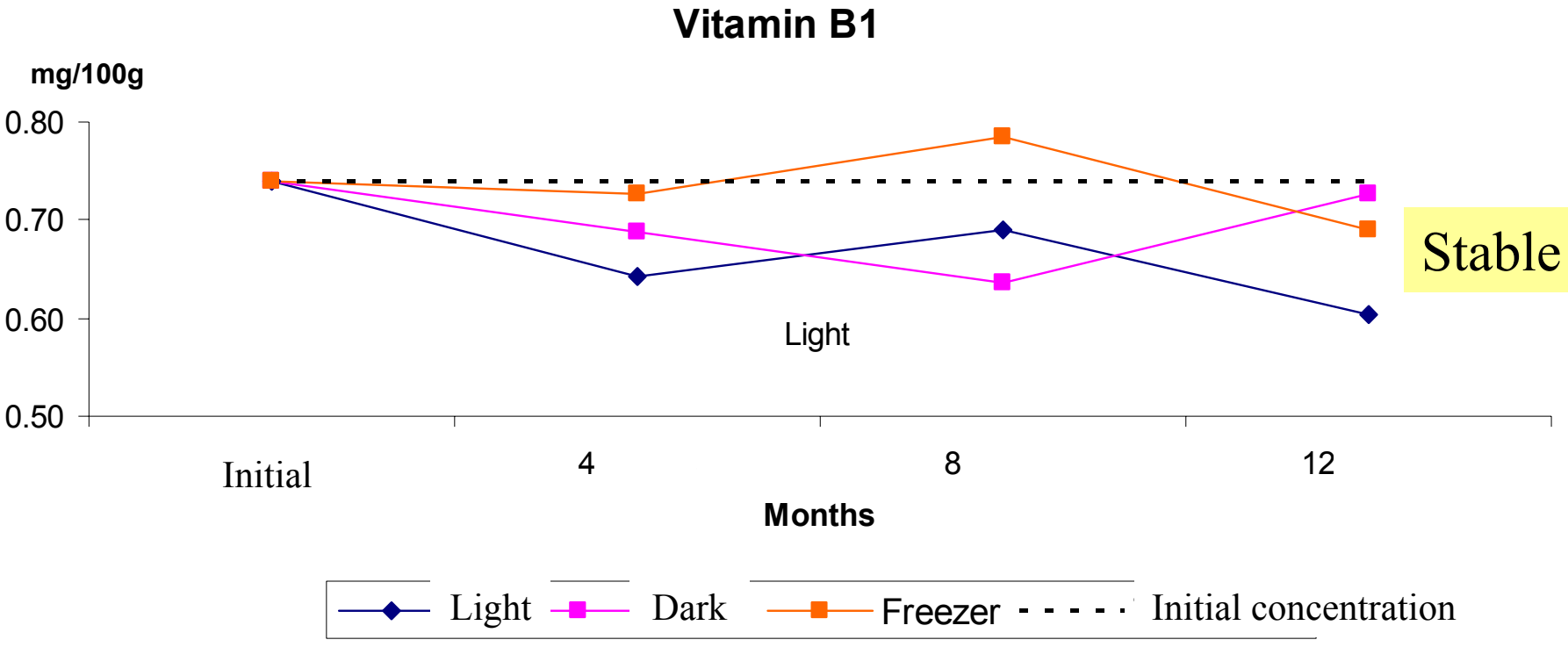


Standard



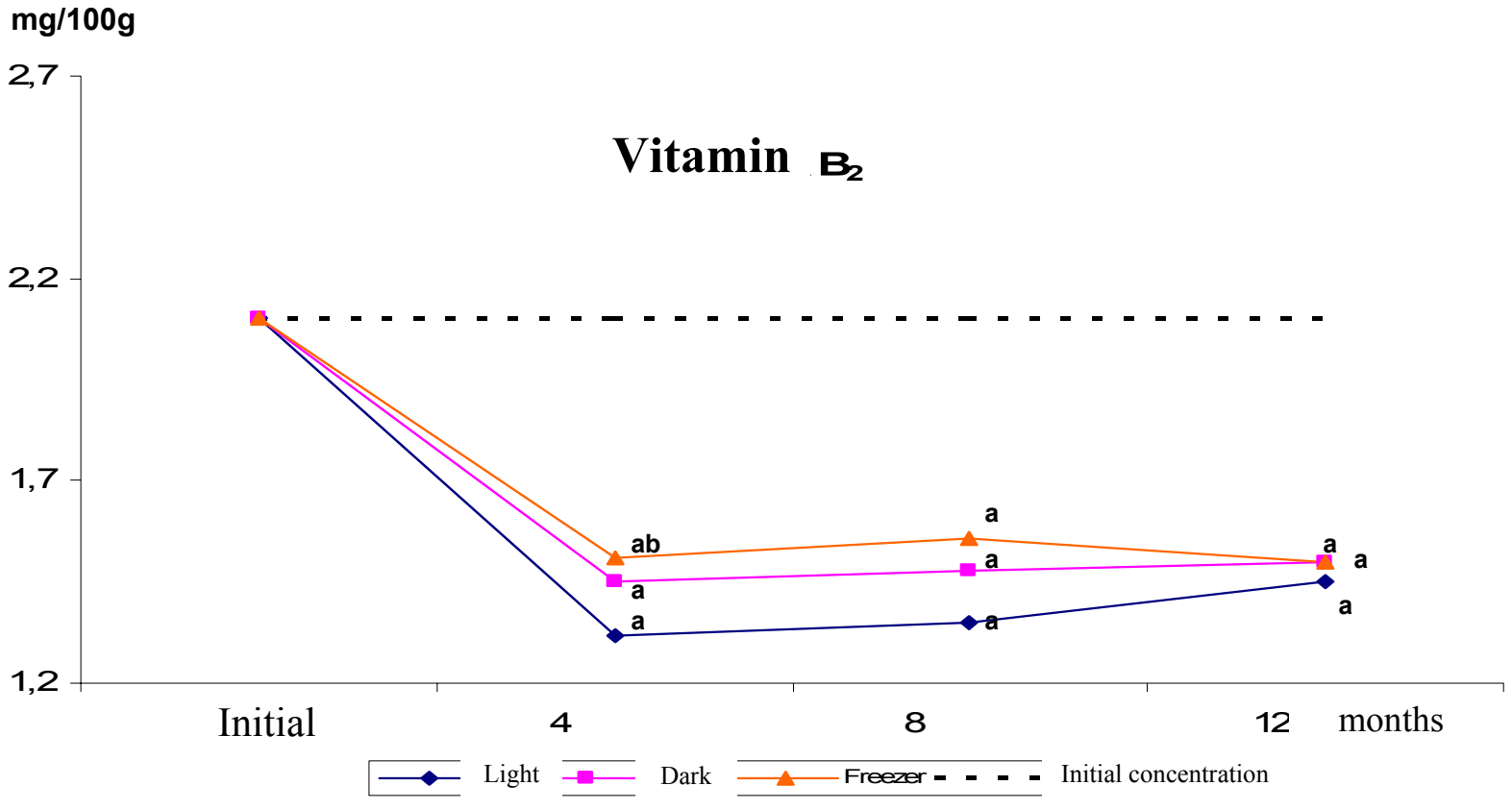
Sample

Results



Stable

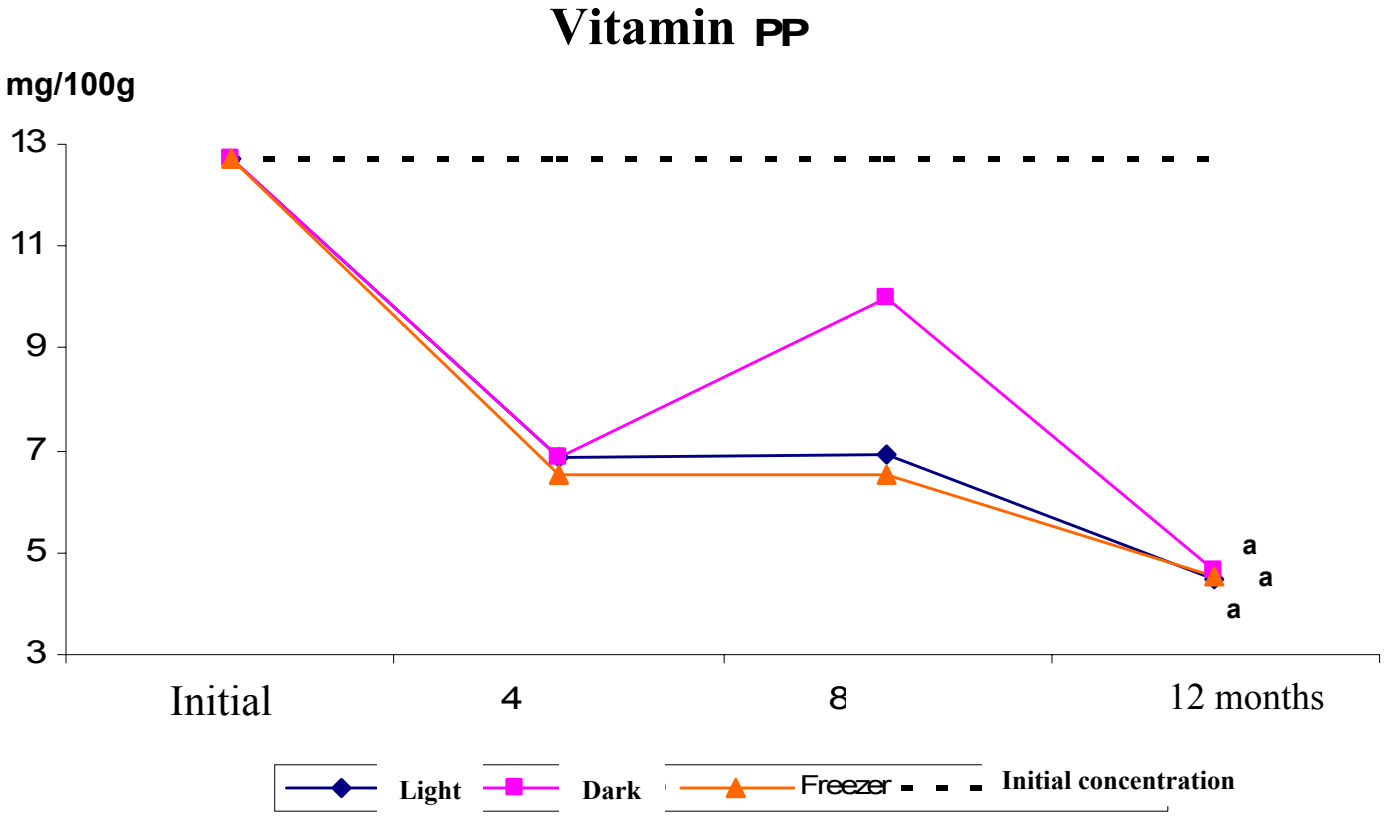
Results



28% lost

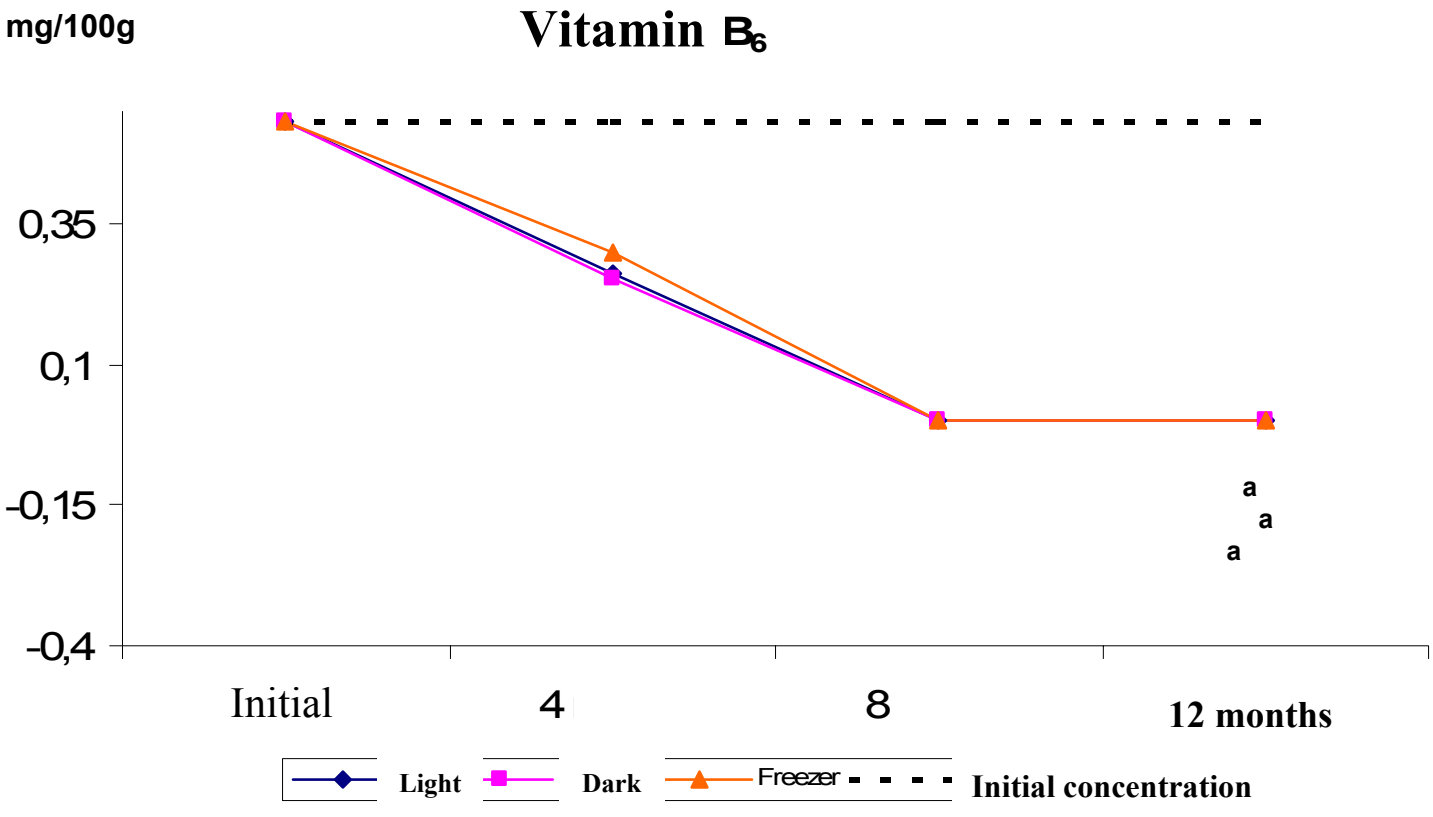
Still vitamin source

Results



60% lost

Results



total lost

Conclusion

- After one year the vitamins were:
- B1 → remain
- B2 → 28% lost
- PP → 60% lost
- B6 → 100% lost
- The vitamin loose depends more on the time of storage than the conditions of storage.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Biblioteca do Conjunto das Químicas
Conjunto das Quimicas

Thank you all...

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