1	Promotion : CHU de Bordeaux	
2	Drug used : Nutrof ® Total	
3	Active substances: 5 mg de Lutein and 1 mg Zeaxanthin per capsule	
4	Full title of the research : Lutein Influence on Macula of Persons Issued from Amd parents	
5	Investigator(s)[1] : Coordination : Professor Jean-François Korobelnik.	
6	Sites of research: - Center 1 : CHU de Bordeaux - Center 2 : CHU de Dijon	
7	Publications[3] :	
8 8.1 8.2	Duration of research: - first inclusion: 21/DEC/2010 - last visit of last patient: 18/JAN/2013	9. Phase of clinical research : NA
10	PRIMARY OBJECTIVE To evaluate the efficacy of 6 months of food supplementation with lutein, zeaxanthin and Omegas 3 to increase the density of the macular pigment at 6 months in subjects at risk of genetic AMD (1st generation from parents affected of AMD). SECONDARY OBJECTIVES - To evaluate the efficacy of 6 months of food supplementation with lutein, zeaxanthin and Omegas 3 to increase the plasma level of Lutein and Zeaxanthin in subjects at risk for genetic AMD (1st generation from affected parents Of AMD). - Measure the initial density of the macular pigment by two methods: autofluorescence and reflectivity; Thanks to 2 measuring instruments (HRA and Visucam) in the center of Dijon and 3 measuring devices (HRA, Visucam and Maculux) in the center of Bordeaux, before any supplementation. - To evaluate the efficacy on the density of the macular pigment after 3 months of supplementation, by the same methods. - To evaluate the efficacy on the density of the macular pigment after 3 and 6 months of stop for the 2 groups treated, and also for the placebo group - Assess the effect of supplementation on plasma cholesterol levels, triglycerides, lutein and zeaxanthin after 3 and 6 months of supplementation. - Measure the evolution of plasma levels of lutein and zeaxanthin, after 3 and 6 months of supplementation stop - Evaluate the correlation between pigment measurements and the clinical form of AMD in the parent (FO photos already present in our files) - Evaluate the changes of the fundus of the eye at the beginning and during the follow-up of the study (evaluated on retinophotos color and OCT Spectralis) - Evaluate the modification of the visual acuity with correction, measured at 4 meters with the ETDRS scale, and the vision of the contrasts. - Evaluate the efficacy of supplementation on cognitive tests, after 3 and 6 months of supplementation. - Measure the evolution of cognitive tests, after 3 and 6 months of supplementation stop. - Assess the general tolerance, - Describe the age, history of smoking, HTA (and possible treatments), height, weight, previous consumption of fatty acids (DHA in particular, with a food questionnaire on oils consumed and fish). - Describe the AMD Phenotype of the parent (s) (followed in the service) - Describe the genetic profile in relation to the genes identified as risk factors for AMD in the subjects included. - Measurement of plasma fatty acids to: • To evaluate the efficacy of supplementation on plasma omega 3 levels after 3 and 6 months of supplementation • Measure the evolution of plasma levels of omega 3 fatty acids, after 3 and 6 months of supplementation stop To evaluate the correlation between plasma levels of omega-3 fatty acids and macular pigment density	

[1] Si la recherche est multicentrique, indiquer le ou les noms des investigateurs coordonnateurs et le nombre total d'investigateurs.

[3] Préciser dans l'ordre : le nom des auteurs, le titre de la publication, le nom de la revue, l'année, le numéro du tome, les pages concernées.

	before and after supplementation.
11	Research methodology4: Randomized, double-blind, multicentre, stratified clinical trial on 2 parallel groups.
12 12.1 12.2	Number of participants involved in the research: - number of people planned: 120 - number of people analyzed: 120
13	Medical condition or pathology studied and main inclusion and non inclusion criteria: MEDICAL CONDITION: subjects at risk of genetically related age-related macular degeneration (AMD) (1st generation from parents with AMD). INCLUSION CRITERIA - Men or women aged 40 to 70 years, - Have a documented history of AMD in their father or mother or both - Minimum visual acuity of 20/25 in ETDRS - The presence of AMD on one eye is possible. - Free, informed and written consent, dated and signed by the participant and the investigator before any examination required by the research. - subject accepting to be registered in the national file. - Affiliate or beneficiary of a social security scheme. CRITERIA OF EXCLUSION - Presence of signs of AMD in both eyes (if DMLA to one eye, possible inclusion for one eye) - History of other progressive ocular pathologies likely to complicate the assessment of age-related macular degeneration and visual acuity (severe glaucoma, strong myopia (greater than or equal to - 6 diopters), other severe retinopathy ...) - Cataract surgery - Opacity preventing the evaluation of photographs of the retina (cataract, corneal dystrophy ...), - Taking of food supplements in the previous year (list of supplements in France: Nutrof, Preservision, Occuvit, I-caps, Vitalux, Naturophta, Maculophta, Oenobiol solar ... See complete list in appendix 2) - Participation in another clinical trial within the previous 30 days, - Non-compliant subjects (ie not able to participate in all follow-up visits during the study year), - Subjects not covered by the French social security system, - subjects under judicial supervision - persons placed under safeguard of justice
14	Investigational drug (s) studied 5 (name, dose, route of administration and lot numbers): Nutrof ® Total, 5 mg Lutein and 1 mg Zeaxanthin, oral, per capsule.
15	Duration of treatment6: 6 months
16	Reference drug (s)7 (name, dose, route of administration and lot numbers), if applicable: NA
17 17.1 17.2 17.3	Evaluation criteria : - efficacy: increased serum and retinal density in macular pigment - security: NA - other: NA
18	Statistical analysis: The data were described using the usual statistics: mean, standard deviation (SD), first quartile (Q1), third quartile (Q3), minimum value (min), maximum value for quantitative variables and frequencies And percentages for qualitative or ordinal variables. Differences between treatment groups were analyzed using a general linear mixed model (fixed effect) with randomized interception adjusted for age, sex, body mass index (BMI), smoking and the center. The analyzes were based on the intention of processing, with the missing data = failure. The P values were set at <0.05 for the statistical significance threshold.
19 19.1 19.2 19.3	Summary – research findings The average age was 56.7 years with 71.7% of women. The mother of 97 subjects (80.8%) had neovascular AMD, with only 25 of the subjects's fathers (20.8%). - Results of the evaluation of effectiveness, if any: The blood samples taken confirmed the increase in plasma carotenoids after 3 and 6 months of follow-up in the supplementation group. In addition, serum concentrations of Lutein and Zeaxanthin are correlated with oral administration of lutein, zeaxanthin, omega-3 fatty acids and antioxidants for 6 months. Measurements of macular pigment density using either HRA-modified (Heidelberg) or Visucam 200 MPD (Carl Zeiss Meditec) did not demonstrate a significant increase in macular pigment density in the treated group Relative to the control group. - Safety assessment results, if applicable: NA - Conclusion: The LIMPIA study did not show a significant difference in MPD after oral supplementation of Lutein + Zeaxanthin after 6 months of treatment despite the increase in plasma levels of Lutein and Zeaxanthin in first generation subjects from parents with AMD . Further research is needed to better evaluate the density of macular pigments and to understand the cellular uptake and metabolism of these

	nutrients in the macula
20	Date du report : 02/JAN/2017
21	Number EudraCT : 2010-A00263-36
22	Date of transmission of report : 04/01/2017 Signature : Name / capacity: Mr Joaquin Martinez - Director of Clinical Research and Innovation