

## VEGETAL PLACENTA EXTRACTS SUBSTITUTE ANIMAL PLACENTA EXTRACTS<sup>1</sup>

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### SUMMARY

Placenta Extracts from cereal bran layers, like rye (illustration 1a,b) deliver cell metabolism activating extracts which can substitute animal placenta ones; rye placenta extract: table A: properties, table B: respiration increasing data, table C: metamorphosis acceleration.

The use of animal material for pharmaceutical and cosmetic preparations has been disrupted and restricted since the appearance of BSE (bovine spongiforme encephalopathy). The BSE-crisis from 1986 could have been overcome using vegetal based preparations (1a, 1b) or animal cell culture based ones (1c).

At once, after the discovery of the thermostable priones we started experiments to substitute *animal* starting materials by *vegetal* analogues ones, for instance *animal cow placenta* by *vegetal placenta* received from cereals like rye (*secale cereale*), wheat (*triticum vulgare*), triticale, oats, rice ecc. We described 1996 (2a) and later grain-placenta preparations (2b), gained from grain carpel brans, incl aleuron proteins, directly

and/or via cell culture, under patent protection since 2003 (2c). Concerning rye-placenta see the illustrations 1a/b.

The vegetal placenta extracts are able – like the animal ones (3,4) - to increase cell metabolic activity (cell stimulation). This has been proven for rye placenta extracts in WARBURG experiments (table B) and in growth tests as metamorphosis acceleration of tadpoles (table C).

Analogue to rye placenta preparations we prepared other cereal placenta extracts from bran layers (incl their aleuron cell layer) based on triticale, corn, oats, sorghum, spelt, rice, wheat, barley (2a -c).

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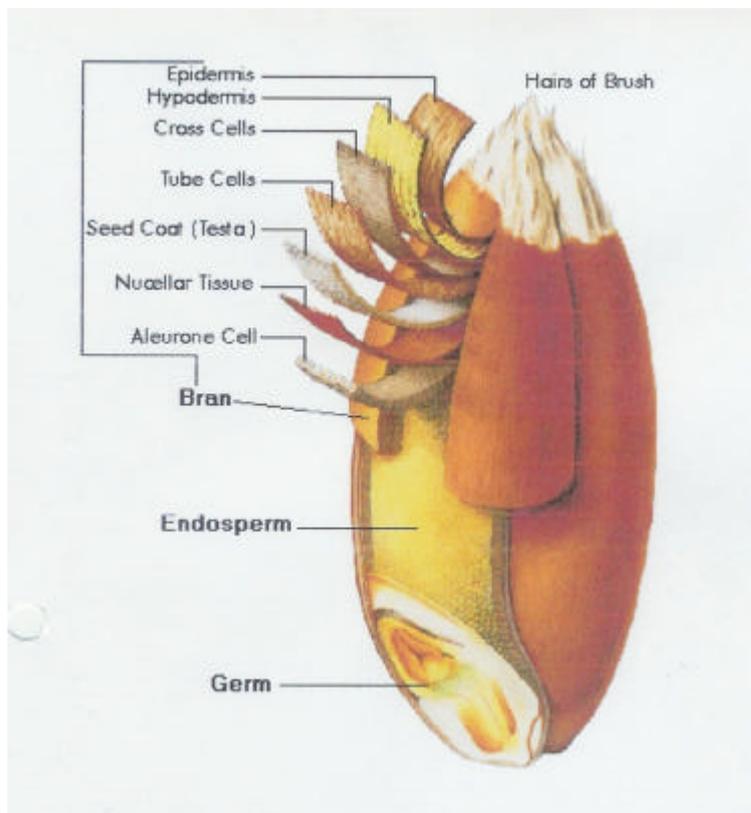
<sup>1</sup> This paper is a short report of a conference held in May 1996 in the colloquium of the Chemical Central Institute of UFSM , Santa Maria, RS, Brazil.

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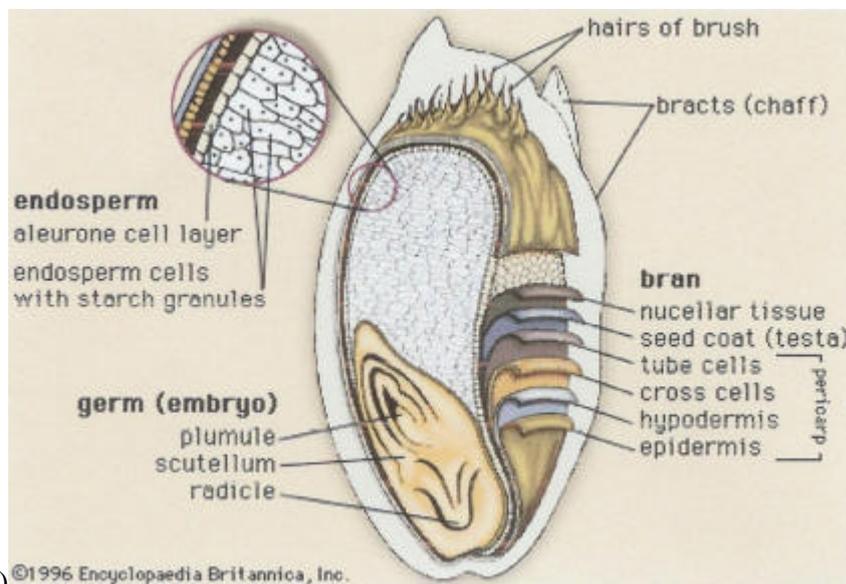
**Illustration 1: Rye Kernel**

1a <http://www.goldengrainmills.biz/kernel.gif>

1b Encyclopedia Britannica, Inc 1996



a)



b)

The rye bran is the hard, browish outer protective skin of the grain; it surrounds the germ and the endosperm.

The bran consists of seven layers which are a concentrated source of dietary fiber; *the layers with placenta character are collected together with the aleurone cells (2a-c).*

The inner part of the grain is the endosperm containing proteins and carbohydrates (from the endosperm the flour is produced).

The germ contains the plant embryo.

**Properties incl. toxicological results** for one of our prepared „Rye Placenta-Extracts“ are shown in table A .

**Table A: Quality standard of “Rye-Placenta-Extract” with dermatologic compatibility data for CELLRYEL RP 17**

pH	6,75
dry substances	1,8 %
N content	> 1,8 mg/ml
Identification:	
WARBURG factor	> 1,8 (liver homogenate = 1,0)
<b>(respiration increasing factor)</b>	
amino acids	ninhydrine positive (TLC)
peptides	biuret positive
proteins	protein-free
nucleic acid components	positive (TLC)
Purity:	
heavy metals	< 20 ppm
arsen	< 2 ppm
sterility	germfree, prion-free
pyrogenes	pyrogenfree
Toxicology:	
acute toxicity (150 mice)	DL <sub>50</sub> i.v. : >25ml/kg peroral : >25 g/kg
chronic toxicity (rats, dogs)	no toxicity
reproduction, fertility, teratogenity (rats)	no impairment
teratogenity for rabbits (2,4kg)	no negative findings (20 animals)

The dermatologic compatibility have been tested in the usual way. The Rye Placenta Extract RP 17 passed all tests without showing any irritation and without any negative results :

- Open epicutaneous test of sensibilisation of guinea pig for 3 weeks according to BÜHLER,
- eye irritation test with rabbits according to DRAIZE,
- examination of primary skin irritation with rabbits (DRAIZE),
- clinical-allergological examination: PATCH-test with human beings.

In addition: AMES test for mutagenic activity, carried out without and with metabolic activation (screening).

Quality standard of “Triticale-Placenta-Extract” (TRICELL) in (2b,c).

**The methods for examination of the metabolism activating properties of Rye Placenta Extract are:**

1) *Measurement of the increase of tissue respiration*, e.g. of a liver homogenate of a rat in the WARBURG-test for determination of the respiration increase factor: the respiration of the liver homogenate is set to be 1,0 (control)

2) *Growth tests*: Tadpoles of *Xenopus laevis* DAUDIN by measuring their length, the increase of their weight and the *advances of the metamorphosis to a frog* (start and end of the conversion to a frog) *in days*

**Results to 1):** The factor for increasing respiration of the Rye Placenta Extract RP 17 equals 1,83: table B

**Table B: Record of the WARBURG-factor determination**

Result: factor for rye placenta extract: 1,83 – control set to 1,0  
(pre-incubation time 1 hour at 37°C)

	1	2	3	4	5	6	7	8
Manometervol.		1379	1349			1377	1333	
Gefäßvolumen		13002	14953			14894	13949	
Zeit: 0 Min.	t1	/	t2	t1	t1	/	t1	t1
20 "	-2	-24	-21	-3	-5	-56	-62	-3
40 "	-4	-41	-37	-4	-6	-74	-84	-4
60 "	-5	-55	-51	-5	-6	-91	-103	-5
80 "	-6	-69	-62	-8	-7	-106	-120	-8
100 "	-6	-77	-70	-9	-9	-118	-129	-9
humpoint		-78	-65			-108	-125	
KO <sub>2</sub>		0,971	1,087			1,117	1,050	
ml O <sub>2</sub>		68,0	70,7			122,8	131,3	
ml Melwaste		-69,4	ml O <sub>2</sub>			-127,1	ml O <sub>2</sub>	
<u>Faktoren</u>		<u>F = 1,000</u>				<u>F = 1,83</u>		

Method described in the patent application from 20 Aug 2003 under PCT number WO 2005/027946 A 1, pp 28-31, entitled "Vegetal Placenta Extracts. Method for the Production and use thereof" (2c); cf. also method description in (4).

Results to 2):

**Table C: Influence of the "Rye-Placenta-Extract" CELLRYEL RP 17 on the metamorphosis acceleration of tadpoles *Xenopus laevis* DAUDIN**

Experimental group	1	2	3	4
d 49			1+0	1+0
d 53	0+1		1+0	1+0
d 56	0+2	0+1	1+1	1+1
d 58	0+3	0+1	1+1	1+2
d 60	0+3	0+1	1+2	1+2
d 63	0+3	1+1	2+3	2+4
d 64	1+3	1+1	2+4	2+4
d 67	2+2	1+0	2+6	3+5

column 1 and 2: controls

column 3 and 4: with "Rye-Placenta-Extract" RP 17

number pairs:

first number: number of frogs

second number: number of the metamorphosis (the metamorphosis is finished when the tail has been resorbed completely or almost completely)

Method described in the patent application under PCT number WO 2005/027946 A 1, pp 41-43, entitled "Vegetal-Placenta-Extracts. Method for the Production and use thereof" (2c).

Final remark: in the mean-time the *rye-placenta*-based products are in trade in Asia for cosmetics called CELLRYEL, and as food drug called COLEZZO.

The Rye-Placenta-Extract is an alternative to foetal calf serum extract: CELLRYL (5)

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