

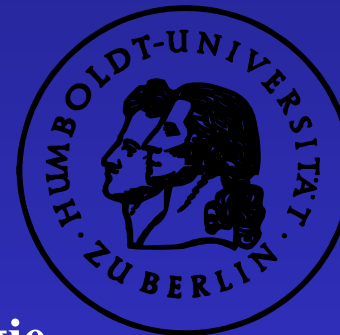
ESPEN 2003

- Cannes -

Evaluation of Intestinal Mediators of Energy Homeostasis in a Human Model

J. Ockenga

Charité

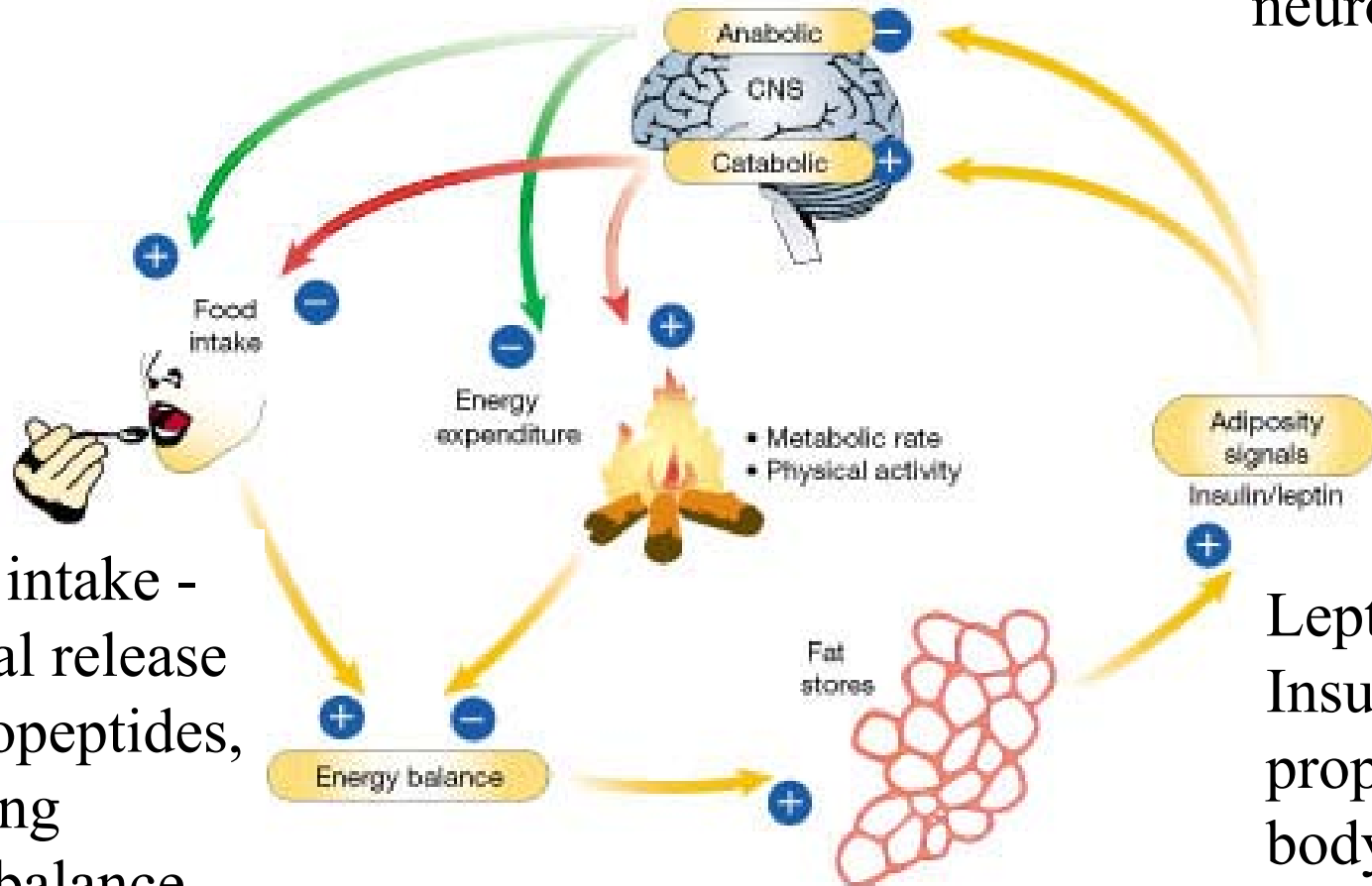


**Gastroenterologie, Hepatologie & Endokrinologie
(Director: Prof Dr Herbert Lochs)
Humboldt Universität, Charité
Berlin**

Regulatory Pathways in Energy Homeostasis

Central pathways, regulating energy homeostasis

Central effect of neuropeptides



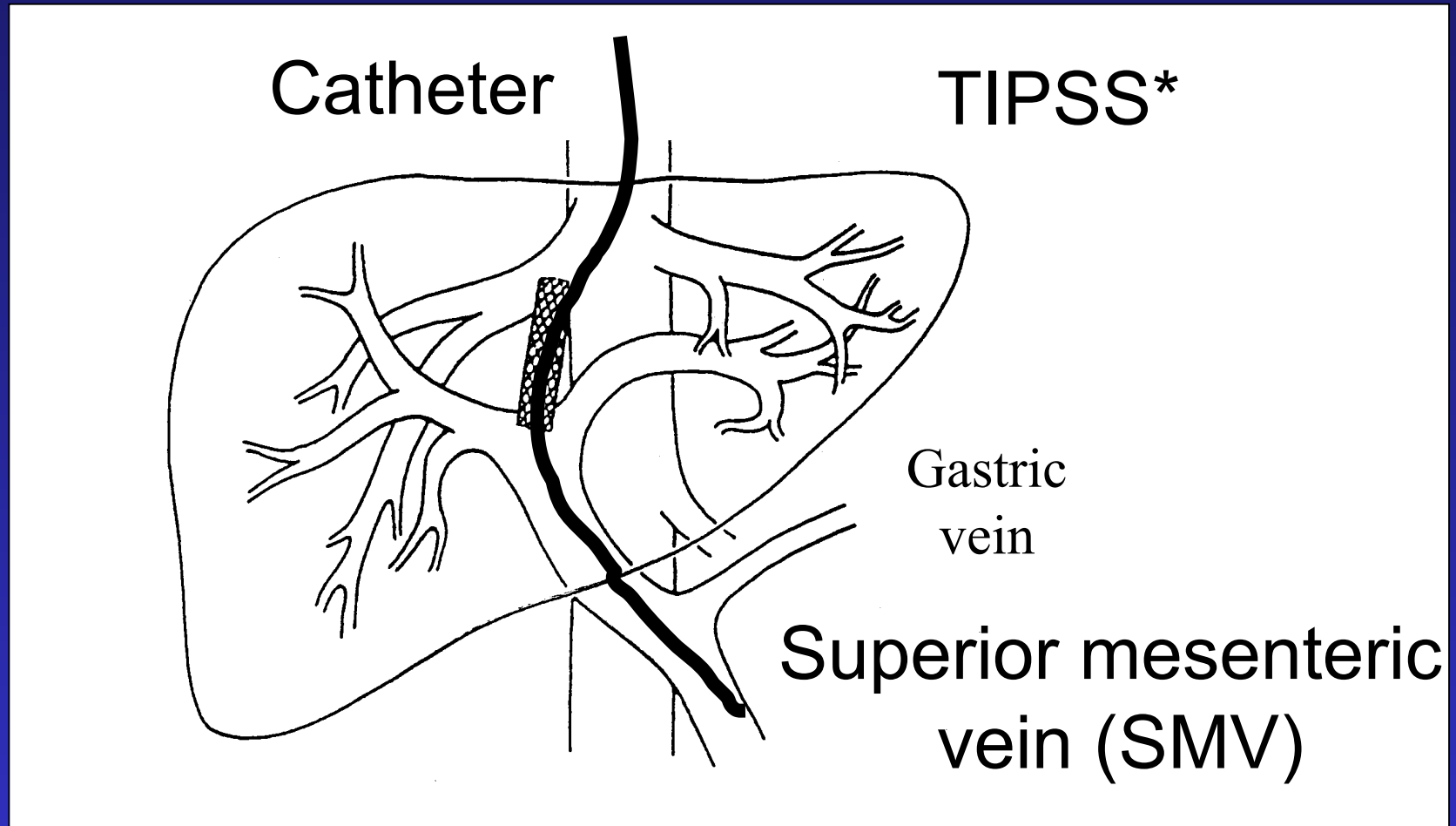
Caloric intake - intestinal release of neuropeptides, regulating energy balance

Leptin and Insulin – proportional to body fat and energy balance

Aim of the Study

To establish a human model which allows
the investigation of intestinal release of neuropeptides
in response to different routes of feeding

Intestinal Access



* Transjugular Intrahepatic Portosystemic Shunt Stent

Protocol

oral feeding

300 kcal



parenteral feeding

(basic metabolic rate * 1,5/24)



0

60

120

240

300 m

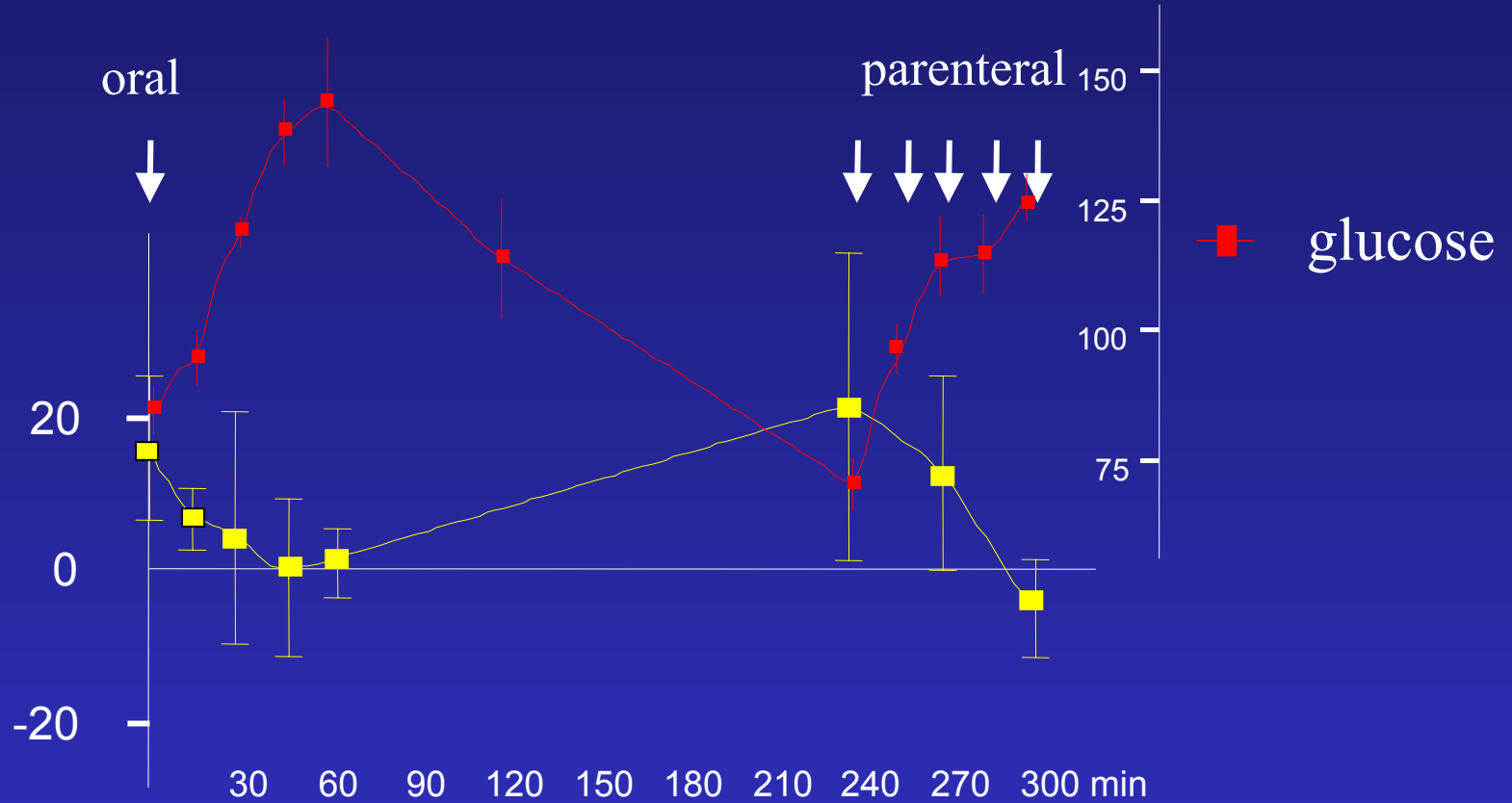
Sequential measurement of leptin components (bound leptin and soluble leptin receptor), ghrelin and glucagon in blood samples from the

- arteria radialis
- cubital vein
- superior mesenteric vein

Characteristics of Patients

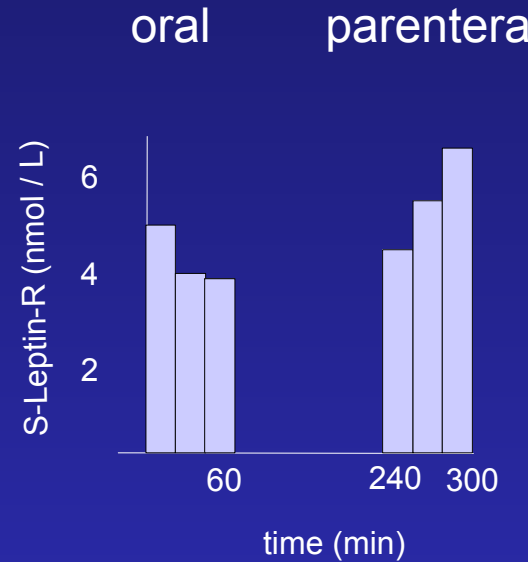
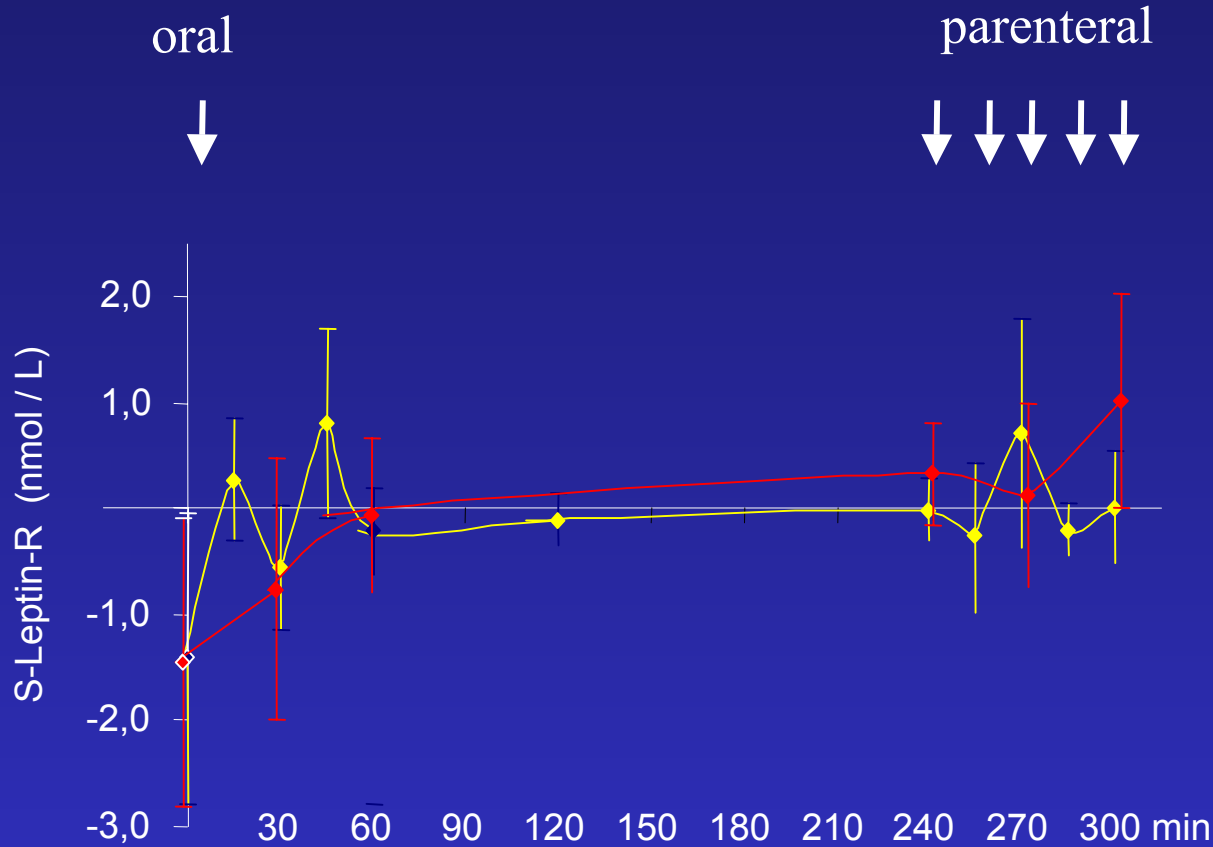
Age median (range)	50 (40-67) years
BMI (mean \pm SD)	26.7 \pm 2.2 (kg / m ²)
Gender (w / m)	2 / 3
Fat mass (mean \pm SD)	21,6 \pm 7,1 kg
Fat-free mass (mean \pm SD)	56.2 \pm 10,6 kg
Upper arm circumference (mean \pm SD)	32.5 \pm 2.6 cm
Triceps skin fold (mean \pm SD)	15.8 \pm 4.4 mm
Plasma albumin (mean \pm SD)	3.9 \pm 0.3 g/dl
Creatinine / 24h urine (mean \pm SD)	1,5 \pm 0.6 mg/dl
Child-Pugh Points median (range)	5 (5-8)
Grade A / B / C	4 / 1 / 0

Glucagon



—■— Δ mesenteric venous – arterial glucagon concentration

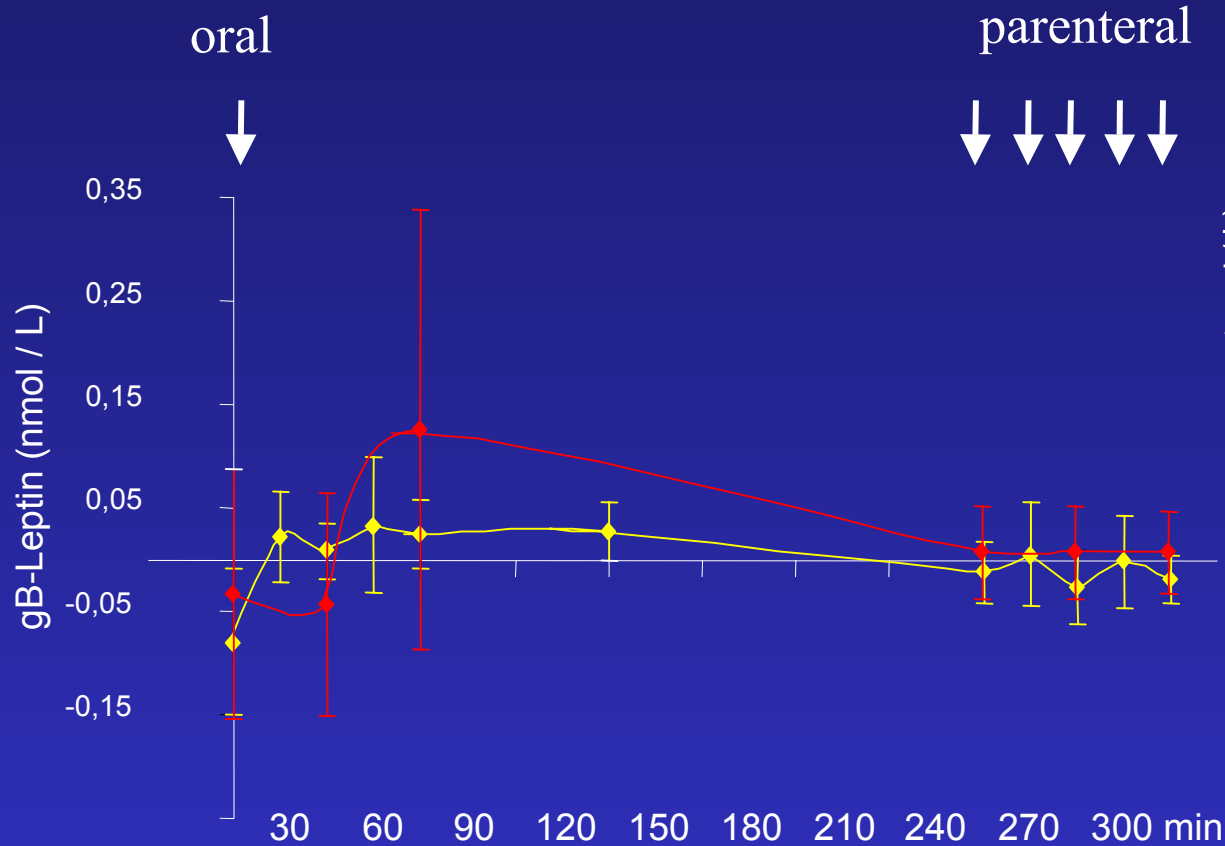
Soluble Leptin Receptor



—◆— Δ cubital vein - arterial

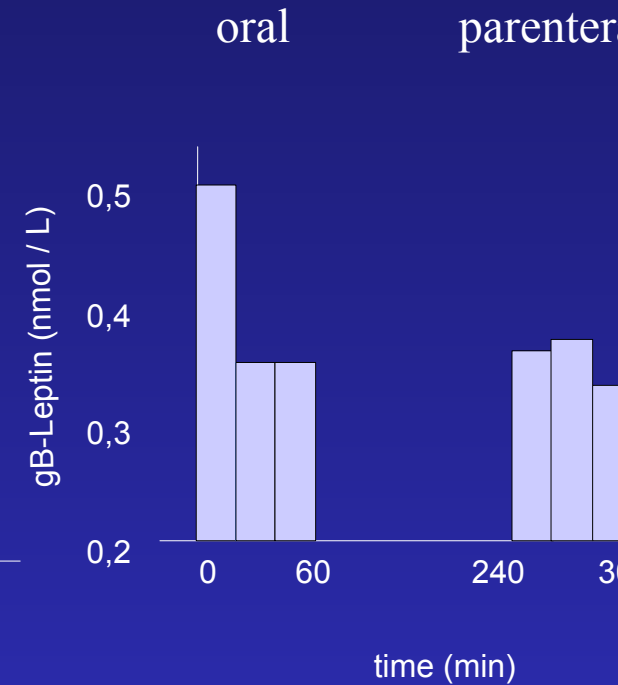
—◆— Δ mesenteric venous - arterial

Bound Leptin

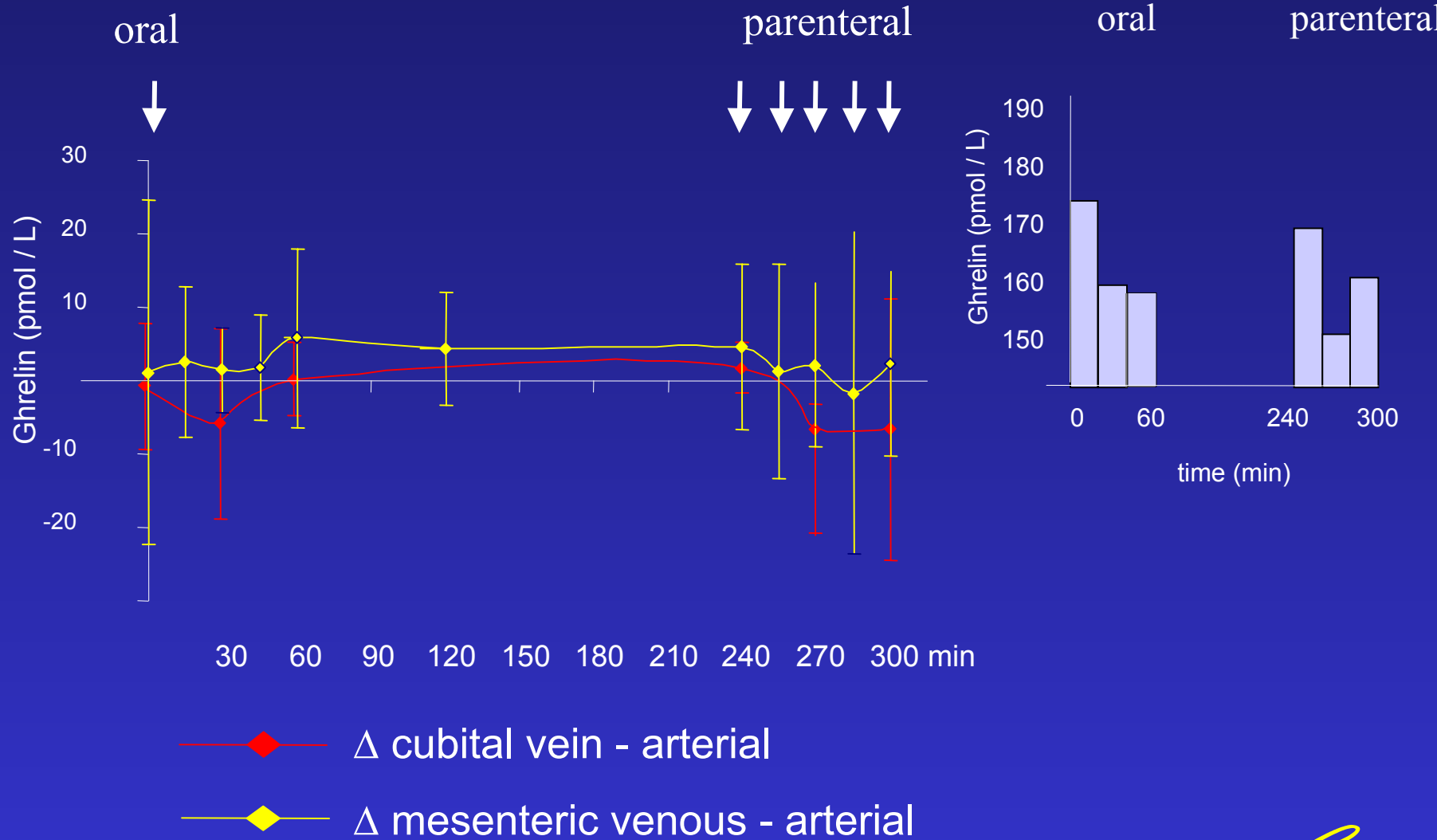


—◆— Δ cubital vein - arterial

—◆— Δ mesenteric venous - arterial



Ghrelin



Summary of Results

	intestinal		forearm		systemic	
	EE	TPN	EE	TPN	EE	TPN
Glucagon	-	-	+/-	+/-	-	-
Bound Leptin	+/-	+/-	+/-	+/-	-	+/-
S-Leptinreceptor	+	+	++	++	-	++
Ghrelin	+/-	+/-	+/-	-	-	-

EE, enteral feeding

TPN, total parenteral nutrition

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Conclusion

Feasible and reliable model to investigate intestinal (jejunal or abdominal fat) mediators in response to feeding

There is a different response between soluble leptinreceptor and bound leptin to feeding.

The intestinal release of the leptin components and ghrelin contributes only minor to the systemic changes.

Dep. of Radiology, Charité

Thomas Kröncke, MD

Clinical Endocrinology

Medical School Hannover, FRG

Georg Brabant

Dep. of Gastroenterology, Hepatology
and Endocrinology, Charité

Ajmal Omar

Tatjana Schuetz

Esmatolah Kasim

Silja Mueller

Herbert Lochs

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