0.38 g/l^{-1}h^{-1}, which was reached at the 45 th h (Figure 1b). In Figure 1c a graphic representation of the specific growth rate and generation time is shown. The maximum specific growth rate (μm) was of 0.069 h^{-1}, corresponding to a generation time (g) of 10 h.

In Figure 2, the essential amino acid content of the biomass with 49% of protein was compared with the standard set-up by FAO[8], and the soybean meal protein. The amino acid composition of the protein of *Candida sp.* grown on alfalfa residual juice, is favorably compared to the FAO standard as well as to soybean meal protein. Approximately 38.8% of the amino acids in the single-cell protein obtained were found to be essential, while in soybean meal this Figure was 31.4%.

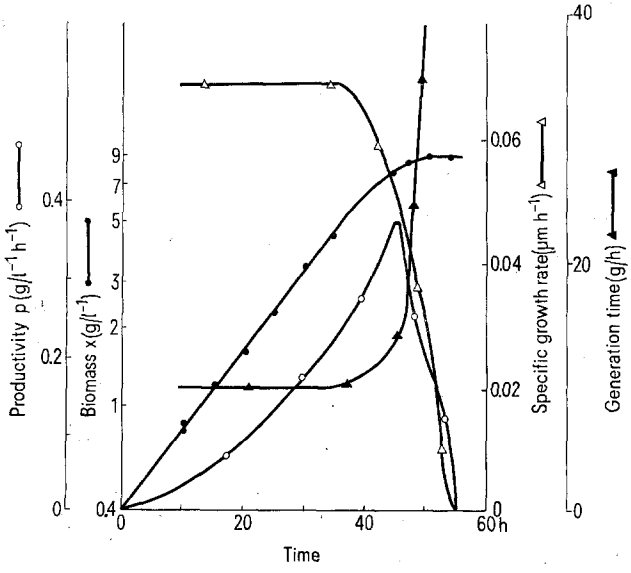

Fig. 1a–1c. Cultivation of *Candida sp.* on alfalfa residual juice. Biomass x (g/l^{-1}), productivity p (g/l^{-1}h^{-1}), and specific growth rate (μm/h^{-1}) and generation time (g/h) respectively, in relation to cultivation time.

The production of single-cell protein from alfalfa residual juice seems to be feasible. Since the use of continuous culture would increase the productivity and the obtention of leaf protein concentrate would be more economical, such studies are being carried out.

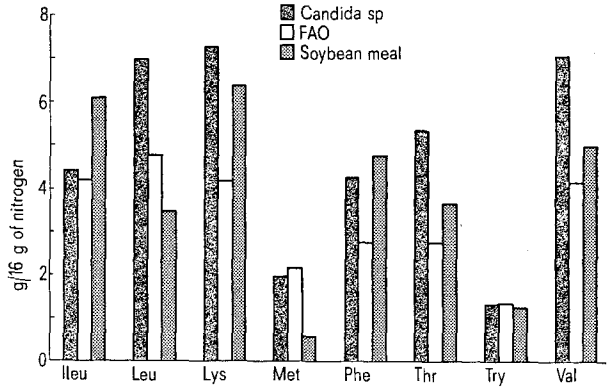

Fig. 2. Essential amino acid distribution in *Candida sp.* grown on alfalfa residual juice, FAO standard-reference protein, and soybean meal. Abbreviations: ileu, isoleucine; leu, leucine; lys, lysine; met, methionine; phe, phenylalanine; thr, threonine; try, tryptophane; val, valine.

Resumen. Jugo residual de alfalfa, obtenido como subproducto durante la elaboración de concentrado proteico de hojas, fue utilizado como sustrato para la producción de proteína unicelular.

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Effect of Various Prostaglandins and Serotonin on Protein Secretion from Rat Exocrine Pancreas

A number of vasoactive substances have recently been demonstrated in pancreatic tissue. Prostaglandins (PG) E_2 and $F_{2\alpha}$ are found in bovine pancreas[1]; their distribution in various cell types, however, is still unknown. Mouse exocrine pancreas can take up 5-hydroxytryptophan and apparently store the decarboxylated amine, serotonin (5-HT) in zymogen granules[2]. The release of these agents during 'stimulus-secretion coupling'[3] is a distinct possibility, 5-HT because of its subcellular distribution and the PG's perhaps in an analogous fashion to their observed release by catecholamines and adrenocorticotrophic hormone[4]. To test if these substances play any regulatory role in secretory events their direct actions on basal and stimulated release of secretory protein was monitored in rat exocrine pancreas in vitro.

Materials and methods. Female Wistar rats, 180–225 g, were decapitated; pancreata were excised, and trimmed of adherent mesentary and fat in chilled incubation medium. Pancreatic fragments (10–20 mg) were 'Pulse-labelled' with ^{3}H-leucine according to the technique of JAMIESON and PALADE[5] in 10 ml Krebs-Ringer bicarbonate buffer supplemented with 10 m*M* glucose and L-amino acids (without L-leucine) in concentrations suggested by EAGLE[6]. Following a 1 h 'chase period' (1 m*M* L-leucine present) tissue samples were distributed in 2 ml of buffer and incubated an additional 60 min in the presence or absence of added stimuli. Termination of incubation and measurement of secreted ^{3}H-labelled protein were as previously described[7]. Release of protein from the tissue

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Table I. Effects of prostaglandins (PG) E_1, E_2 and $F_{2\alpha}$ on secretion of ^{3}H-labelled protein from rat exocrine pancreas

Additions	Release (%)			
	Final concentrations (M)			
	10^{-8}	10^{-7}	10^{-6}	10^{-5}
None 6.80				
PGE_1	7.28	6.70	6.68	8.10
PGE_2	5.73	6.13	6.20	6.15
$PGF_{2\alpha}$	5.77	7.48	6.48	7.25

is expressed as the percent total (medium + tissue) trichloracetic acid-insoluble radioactivity found in the medium. Experiments were performed at least 3 times.

Results and discussion. The effects of varying doses (10^{-8}–10^{-5} M) of PGE_1, E_2 and $F_{2\alpha}$ on secretion of ^{3}H-labelled protein from rat exocrine pancreas are described in Table I. None of the PG's altered the rate of basal secretion. Similar findings were observed in isolated, perfused cat pancreas infused with PGE_1, E_2, $F_{1\alpha}$ and $F_{2\alpha}$ in the presence of secretin[8]. Furthermore, the various PG's (10^{-5} M) did not affect the secretory response to either carbachol or dibutyryl cyclic AMP (Table II). Serotonin (10^{-7}–10^{4} M) also did not alter basal secretion (Table III)

Table II. Effects of prostaglandins (PG) E_1, E_2 and $F_{2\alpha}$ on carbachol and dibutyryl cyclic AMP stimulated secretion of ^{3}H-labelled protein from rat exocrine pancreas

Aditions	Release (%)			
	None	PGE_1 (10^{-5})	PGE_2 (10^{-5})	$PGF_{2\alpha}$ (10^{-5})
None	7.40	8.25	8.30	6.20
Carbachol (10^{-5})	22.88	23.70	25.70	26.97
Dibutyryl cyclic AMP (10^{-3})	13.55	15.63	14.33	13.85

Final concentrations (M) in parentheses.

Table III. Effect of serotonin (5-HT) on secretion of ^{3}H-labelled protein from rat exocrine pancreas

Additions	Release (%)			
	Final concentrations (M)			
	10^{-7}	10^{-6}	10^{-5}	10^{-4}
None 5.23				
5HT	5.48	6.10	5.30	5.60

and in a dose of 10^{-5} M was without effect on the relesae of protein stimulated by carbachol and dibutyryl cyclic AMP (Table IV).

It is concluded from these studies that though the vasoactive substances tested have a marked stimulatory effect on fluid and electrolyte secretion from exocrine pancreas[8] or salivary gland[9–10], they are without direct effect on the basal or stimulated release of protein from the pancreas.

Table IV. Effect of serotonin (5-HT) on carbachol and dibutyryl cyclic AMP stimulated secretion of ^{3}H-labelled protein from rat exocrine pancreas

Additions	Release (%)	
	None	5-HT (10^{-5})
None	6.10	5.91
Carbachol (10^{-5})	23.38	23.97
Dibutyryl cyclic AMP (10^{-3})	10.68	9.36

Final concentrations (M) in parentheses.

Résumé. Les effects de plusieurs prostaglandines et de la sérotonine sur la sécrétion des protéines du pancréas du rat ont été étudiés. Ces substances vasoactives n'agissent pas directement sur le pancréas pour provoquer un effet sécrétoire et n'affectent pas la sécrétion stimulée par carbachol ou l'analogue dibutyryl de l'AMP cyclique.

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Kinetics and Subcellular Distribution of S^{35}-Taurine Uptake in Rat Cerebral Cortex Slices

Taurine has been proposed as a possible neurotransmitter in rat cerebral cortex[1,2]. One of the criteria for such a function is a specific high affinity saturable transport mechanism at the cellular membrane, following Michaelis-Menten kinetics with K_m-values of the order of 10^{-5} M, as has been found, for example, for glycine, glutamate and γ-aminobutyrate (Gaba)[3]. K_m-values above 10^{-4} M do not seem to be involved in specific

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