1. Modello Rameal:

“c” (equazione A6) corrisponde a “d”

1. Condizioni iniziali equazione A1 e Vm0:

% Basal plasma glucose

Gpb=Gb\*Vg; %mg/kg

% Renal excretion (fixed)

ke1=0.0005; %min^-1

ke2=339; %mg/kg

% Splanchnic (insulin-independent) glucose uptake

Fsnc=1; %mg/kg/min

if Gpb<=ke2

%disp('no excrection')

Gtb=(Fsnc-EGPb+k1\*Gpb)/k2; %mg/kg

Vm0=(EGPb-Fsnc)\*(Km0+Gtb)/Gtb; %mg/kg/min

else

%disp('yes excrection')

Gtb=((Fsnc-EGPb+ke1\*(Gpb-ke2))/Vg+k1\*Gpb)/k2;%mg/kg

Vm0=(EGPb-Fsnc-ke1\*(Gpb-ke2))\*(Km0+Gtb)/Gtb; %mg/kg/min

end

% EGPb

kp1=EGPb+kp2\*Gpb+kp3\*Ib+kp4\*Ilb; %mg/kg/min

1. Condizioni iniziali equazione A2:

% Basal plasma insulin

Ipb=Ib\*Vi; %pmol/kg

% m2 fixed at 0.268 (min^-1)

m2=0.268;

% Basal Hepatic Extraction

HEb=(SRb-m4\*Ipb)/(SRb+m2\*Ipb);

HEb = max(HEb,0);

m30=HEb\*m1/(1-HEb); %min^-1

% Basal liver insulin

Ilb=(Ipb\*m2+SRb)/(m1+m30); %pmol/kg

% Basal extra-vascular insulin

Ievb=Ipb\*m5/m6; %pmol/kg

1. Formule di Van Cauter per determinare i parametri di cinetica del Cpeptide:

b1=log(2)/(0.14\*Age+29.16);

struttura.BMI=BW/(H/100)^2;

if struttura.BMI<=27

a1=0.14;

FRA=0.76;

else

a1=0.152;

FRA=0.78;

end

k12=FRA\*b1+(1-FRA)\*a1;

k01=(a1\*b1)/k12;

k21=a1+b1-k12-k01;

BSA=0.007194\*(H^(0.725))\*(BW^(0.425));

if gender==1

Vc=1.92\*BSA+0.64; % Volume MEN

else

Vc=1.11\*BSA+2.04; % Volume WOMEN

end

Cp2b=Cpb\*k21/k12;

SRb=Cpb/BW\*Vc\*k01;