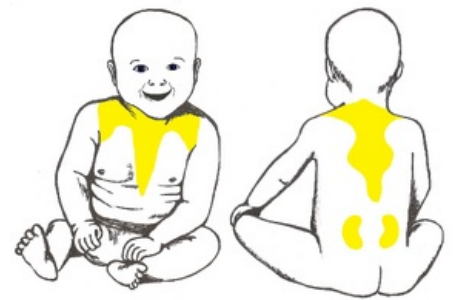


Non-shivering thermogenesis

Chemical (non-tremor) thermogenesis takes place in *brown adipose tissue*. For humans, it is of fundamental importance in **newborns**, when it allows heat production to be increased up to twofold. Brown fat is found in the area *under the shoulder blade* and around the *large vessels*, even in an adult. However, the importance of this mechanism is considerably lower in adults and allows an increase in heat production by 10-15%.^[1]

 For more information see *Brown fat*.

Noradrenaline from sympathetic nerve endings or an increased level of adrenaline in the *peripheral blood* activates the protein *thermogenin* (uncoupling protein 1, UCP1) via β 3 -adrenergic receptors.^[2] This will allow the respiratory chain to be uncoupled from ATP production on the *inner mitochondrial membrane*. The proton gradient is thus used to produce **heat**.



Distribution of brown adipose tissue in children

Links

Reference

1. GUYTON, Arthur C – HALL, John E. *Textbook of Medical Physiology*. 11. edition. Elsevier, 2006. pp. 782–784. ISBN 978-0-7216-0240-0.
2. >-,.. *Wikipedia: The free encyclopedia: Thermogenin* [online]. [cit. 2011-04-16]. <<https://en.wikipedia.org/wiki/Thermogenin>>.