

## Bedeutung der AKBA und ein Vergleich von NormalExtraktPulver und BSAK 170

### A.

Hier eine Sammlung der wissenschaftlichen Ergebnisse hinsichtlich der Bedeutung der 3-O-acetyl-11-keto-boswellic acid (AKBA), dem wichtigsten Bestandteil (entnommen dem pubmed – medline Verzeichnis):

1. **Antiproliferative and apoptic effects on colon cancer cells** - beta boswellic acid (BA), 11-keto-boswellic acid (KBA) and 3-O-acetyl-11-keto-boswellic acid (AKBA) were tested for their relative efficacies . Both KBA and AKBA were active, AKBA being more active. [Liu, J.J. et al, Carcinogenesis, 2002, 23(12), 2087-93; Int. J. Mol. Med., 2002, 10(4), 501-5].
2. **Activation of mitogen-activated protein kinases in isolated human polymorphonuclear leukocytes** - Both KBA and AKBA produced substantial activation; boswellic acids lacking the 11-keto groups were ineffective [Altman, A., et al, Biochem. Biophys. Res. Commun., 2002, 290(1), 185-90].
3. **Of the four boswellic acids, AKBA proved to be the most potent inhibitor of 5-lipoxygenase (5-LO).** [Schweizer, S. et al., J. Nat. Prod., 2000, 63(8), 1058-61].
4. **Mixed acetyl boswellic acids significantly inhibited ionophore-stimulated release of leukotrienes B4 and C4** from intact human polymorphonuclear neutrophil leukocytes. Purified AKBA was about 3 times more potent [Wildfeuer, A., et al, Arzneimittelforschung, 1998, 48(6), 668-74].
5. **Inhibitory activity of boswellic acids against human leukemia HL-60 cells in culture** – among the 4 boswellic acids, AKBA produced the most pronounced effect. [Shao, Y., et al, Planta Med., 1998, 64(4), 328-31]
6. **Among the boswellic acids, AKBA induced the most pronounced inhibition of 5-LO** [Safayhi, H., et al, J. Pharamcol. Exp. Ther., 1992, 261(3), 1143-46; Sailer E.R. et al, Br. J. Pharmacol., 1996, 117(4), 615-8; Sailer et al, Eur. J. Biochem., 1998, 256, 364-68]
7. **Ammon et al (EP 0552657) lists the antiinflammatory activities of 6 boswellic acids** in the order of their biological activity based on IC50 values: AKBA, beta-BA, KBA, alpha-BA , ABA, AABA.
8. **AKBA decreased the activity of human leukocyte elastase (HLE)** in vitro the most [Safayhi, H. et al, Planta Med., 1997, 63, 487-93]
9. **Treatment of lymphoproliferative and autoimmune disease conditions in animals including humans-** AKBA was found to be the most active [Majeed, M. et al, can. Pat., CA2372772 (2001); WO00/66111]
10. **Acetyl-11-keto-beta-boswellic acid (sAKBA), the most potent anti-inflammatory component of the resin,**  
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### B.

Hier ein Vergleich zwischen herkömmlichem boswellia Pulver und dem BSAK 170 . zu achten ist auf die AKBA (HPLC method) und auf den Gehalt der Acetyl Gruppe („Total acetyl boswellic acid“), die wirksamste Teilgruppe der Boswelliasäuren ist:

Particulars	Conventional Boswellia Extract	BSAK 170
Colour and appearance	Off white to pale yellow free flowing powder with a characteristic resinous taste	Off white free flowing powder with a characteristic resinous taste
Boswellic acid(Titration method)	70%	70%
Boswellic acid(HPLC method)	35 - 45%	35 - 45%
AKBA (HPLC method)	2 - 3%	<b>10 - 15%</b>
Total acetyl boswellic acid	15 - 20%	<b>35 - 45%</b>
Solubility	Soluble in alcohol	Soluble in alcohol
Bulk density (gm/ml) (Tapped)	0.25 - 0.65	0.4 - 0.8
Bulk density (gm/ml) (Untapped)	0.15 - 0.55	0.2 - 0.5