



Saraca asoca (Ashoka): A Review

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Abstract

Ashoka is the most ancient tree of India, generally known as a “ashok briksh”, botanist known as a *Saraca asoca* (Roxb.), De.wild or *Saraca indica* belonging family *Caesalpinaceae*. Medicinal herbs are moving from fringe to mainstream use with a great number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals. *Saraca asoca* is reported to contain glycoside, flavanoids, tannins and saponins. It is used as spasmogenic, oxytocic, uterotonic, anti-bacterial, anti-implantation, anti-tumour, anti-progestational, anti-estrogenic activity against menorrhagia and anti-cancer. This review contains the Pharmacognostical account of various parts of plant, Phytochemical constituent and different reported pharmacological activity.

Key Words: *Saraca asoca*, Pharmacognostical Feature, Phyto-chemistry, Analytical Parameter, Pharmacology.

Introduction

Herbal medicine has such an extraordinary influence that numerous alternative medicine therapies treat their patients with Herbal remedies, Unani and Ayurveda. Approximately 25 percent of all prescription drugs are derived from trees, shrubs or herbs. Nature has bestowed our country with an enormous wealth of medicinal plants therefore India has often been referred to as the medicinal garden of the world. So stand the medicinal plants *Saraca asoca* as one of the foremost plants utilized from antiquity till to date. Asoka or ashoka is a Sanskrit words which means “without sorrow” or which that gives no grief. Ashoka is one of the most legendary and sacred trees of India. Ashoka tree, universally known by its binomial Latin name *Saraca asoca* (Roxb.), De.wild or *Saraca indica* belonging family *Caesalpinaceae*. [1,2]. It is a evergreen tree called in english Asok tree. It is also known as Kankeli (Sanskrit), Ashoka (Assamese), Ashoka (Bengali) , Ashoka (Gujrati), Ashoka (Hindi), Ashokadamara (Kannada) , Ashok (Kashmiri), Asokam (Malayalam), Ashok (Marathi), Ashoka (Oriya), Ashok (Punjabi), Asogam (Tamil),

Ashokapatta (Telugu) [3]. It is found throughout India, especially in Himalaya, Kerala, Bengal and whole south region. Ashoka is one of the sacred plants of Hindus, and is especially sacred to the Hindu God of Love, Kamadeva, for whom it is worshipped every year on December 27; it is mentioned in Hindu mythology as the Ashoka tree, beneath which the Indian philosopher and founder of Buddhism, Gautama Siddhartha (c.563-483 B.C.) was said to have been born under this tree. The aim of the present study is to provide complete information about the medicinal & pharmacological importance of the *Saraca asoca*.

Classification [4]

Kingdom: Plantae
Divison : Magnoliophyta
Class : Mgnoliopsida
Order : Fabales
Family : Caesalpinaceae
Genus : Saraca
Species : Asoca

Adulterant

The drug is widely adulterated with the bark of *Polyalthia longifolia*. In Hindi and Bengali it is known as devdaru. It is cultivated throughout the hotter parts of India. Some time bark of Ashok mixed with Rohitaka bark (*Afanamexis polystakis*) and *Sicalpinea pulchirena*. *Saraca asoca* barks are differentiate from another bark according some old ayurvedic texts [5,6].

“Ashoko Hempuspasha Vanjulastamrapalavaa
Kankelee Pindpushpasha gandhpuspo natastha
Ashoka Seetalstitakto Grahi Varnya Kashayak
Doshapachitrashadahkarmishoth Vishastrizith”

Ecology and Distribution

Cultivation [7]

1. Soil and climate: The plant requires slightly acidic to neutral soils for good growth with medium to deep well drained fertile soils. It grows well in tropical to sub-tropical situations under irrigation.
2. Nursery raising and planting: The crop can be propagated by seeds and stem grafting. The seedlings are planted in the well manured field during the rainy season.
3. Thinning and weeding: Weeding and thinning of the plants may be done as and when required usually after 15-30 days for better growth.
4. Manures, fertilizers and pesticides: The medicinal plants have to be grown without chemical fertilizers and use of pesticides. Organic manures like, Farm Yard Manure (FYM), Vermi-Compost, Green Manure etc. may be used as per requirement of the species. To prevent diseases, bio-pesticides could be prepared (either single or mixture) from Neem (kernel, seeds & leaves), Chitrakmool, Dhatura, Cow's urine etc.
5. Irrigation: Normally grown as rainfed crop but for better yield irrigation may be done as per requirement (weekly/fortnightly).
6. Harvesting/ post harvesting operation: Bark is removed from about ten years or older tree and then it has to be sun dried.

Natural habitat

It is distributed in evergreen forests of India up to an elevation of about 750 meters. It is found throughout India. Specially in Himalaya, Kerala, Bengal and whole south region. In Himalaya it is found at Khasi, Garo and Lussi hills and in Kerala region it is found in Patagiri, Kaikatty & Pothundi of Palakkad district, Thrisur, Kollam and Kannaur districts [7].

Analytical parameter [7]

Description: A. Colour Brown
 B. Odour Characteristic
 C. Taste Characteristic
 D. Appearance Free flowing powder

Identification: TLC method: Characteristic Chromatographic finger print

Solubility : A. In water NLT 60%w/w
 B. In Alcohol NLT 40%w/w

PH (1% w/v solution): 5 to 7
Loss on drying: NMT 5%w/w
Moisture Content by K.F.: NMT 5% w/w
Ash Content: NMT 5% w/w
Sulphated Ash Content: NMT 5% w/w
Volatile oil content: Do Not Available
Pesticide residue: Do Not Available
Solvent residue: Do Not Available
Assay of active principle by HPTLC / HPLC: Tannins NLT 30 % w/w
Microbiological analysis:

	A. Pathogens (E. coli, S. aureus)	Absent
	B. Total Bacterial Count (CFU/gm)	NMT 800 CFU/gm
	C. Total Fungal Count (CFU/gm)	NMT 500 CFU/gm
Heavy Metal:	A. Arsenic	NMT 1ppm
	B. Lead	NMT 5ppm

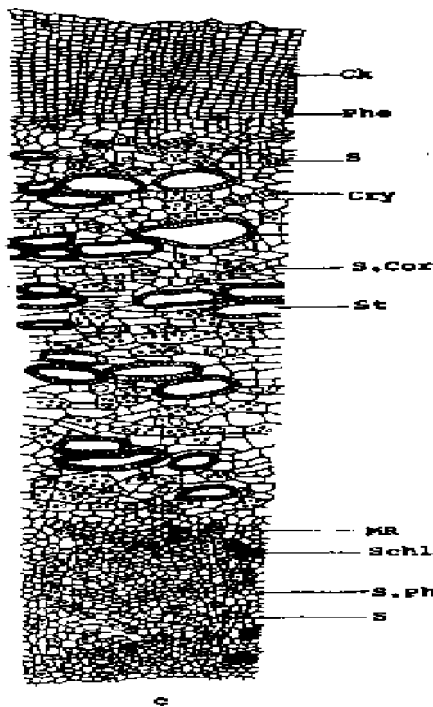
Botanic description:

Saraca indica Or *Saraca asoca* is a small evergreen tree 7-10 cm high. It occurs up to the altitude 750 meters. Leaves are paripinnate 15-20 cm long and the leaflets 6-12, oblong and rigidly sub-coriaceous. Leaves are narrowly lanceolate, cork like at the base and with a short pestistipules are intra-petiolar and completely united. The bark is dark brown or grey or almost black with warty surface. Stem bark are rough and uneven due to the presence of rounded or projecting lenticles. Bark channeled, smooth with circular lenticles and transversely ridged, sometimes cracked. Fracture splinting exposing striated surface, a thin whitish and continuous layer is seen beneath the cork leaver. Flowers are fragrant. Flowers are Polygamous apetalous, yellowish orange turning to scarlet, in short laterally placed corymbose, axillary panicles, bract small, deciduous, calyx petaloid. Seeds are 4-8, ellipsoid-oblong and compressed [2, 8, 9-11].

Pharmacognostical features

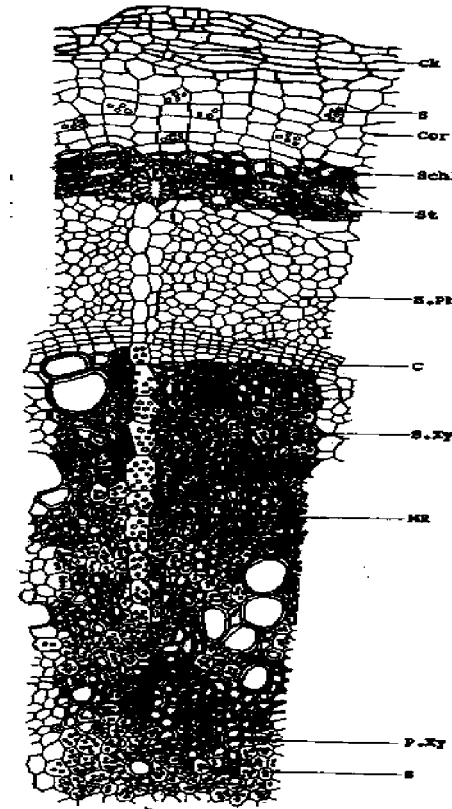
Microscopical characters:

1. Bark: Transverse section of stem bark shows periderm consisting of a wide layer of cork, radially flattened narrow cork cambium, secondary cortex wide with one or two continuous layers of stone cells with many patches of sclereids, parenchymatous tissue contains yellow masses and prismatic crystals: secondary phloem consists of phloem parenchyma, sieve tubes with companion cells and phloem fibres occurring in groups, crystal fibres present[3] [*Figure: 1].



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f ysbdu! po! bhbsl qrbu! bhbjot u Tbm pof nrb! vjcbrrhsvq-! Ti jhf nrb! cpzejj-! Ft di f sji j! dprj! Wjcspl
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bdjvwuz! bhbjot u Tubqi zrpqddvt! bvsf vt-! Ft di f sdi jb! dprj! Qfvepn pobt! bfsvhjoptb-! Qspuf vt!
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f yusbdutpg u f!cbs! !jt!sf qpsuf e!up!dpoujjo!bdjwv!qsjodjqrht -!pof!tjn vrbujoh!boe!u f!pu f sf rbyjoh!
u f!qrhjo!n vt drh!pg u f!jrvn!pg u f!hvjof bl qjh!Ui f!esvh!jt!sf qpsuf e!up!tjn vrbu f t!u f!vuf svt-!
n bl joh!u f!dpousbdjpo!n psf!gfr vf ouboe!qsprrpohf e!Ui f!dszt ubrjrof!hradptjef!t vct ubodf!jt!brtp!
sf qpsuf e!up!tjn vrbu f t!vuf sjof!dpousbdjpo!\: Y

Bojpyzpdjd!Bdjvwuz

Pyzpdjd!bdjvwuz!pg u f!qrbou x bt!tff o!jo!sulboe!i vn bo!jt prbu f e!vuf sjof!qsf qbsbjpot!Ft usphf o.
qsn fe!psl hsbwje!vuf svt!x bt!n psf!tf otjywf!up!u f!bdjpo!pg u f!brdpi prjrlf yusbdut! Qf ouprjovn!
cjubsuf! dprn qrfuf rz! crpd!fe! u f! pyzpdjd! bdjpo!Tf fe! f yusbdut!jt! gvoe! f gf djwv! bhbjot u
ef sn bupqi zjd!grohj!Jo!wjusp!uf t u!po!sdu vuf svt!qsf qbsbjpo-!f yusbdut!pg T!bt pdb!eje!opu ti px!
pyzpdjd!bdjvwuz!T!bt pdb!i bt!cf fo!uf t u!ex jdf!qsf wjpvrt!x ju !of hbjwv!sf tvrd!boe!podf!x ju !
qptjywf!sf tvrd!\36Y!
!!

Joejdbujpot!

Esjfe! sppujt! vtfel! jo! qbsbrztjt-! i f n jqrhjhj! boe! wjt df srrhovn cof tt! of swpvt! tztuf n! dbvtjoh!
uf n qpsbsz! ef rjssvn /! Ju bdu! bt! b! wraf sbsz! boe! i bt uf ot! i f brjoh! yn f! pgtl! jo! usbn b! boe! cpl f o!
cpof t! Qot uf! pg sppu! jt! vtf gvrjjo! gsf dl rrt! boe! f yf sobrtjogtan n bujpot-! vraf st! boe! t! jo! ejt f b f t!
Tqf dj g dbrma! vtf e! up! drhbo-! dpprhboe! drhbs! u f! crppe! Vtf e! gpl judi joh! jo! f d(f n b-! qt psjtjt-!
ef sn bujyt-! boe! i f sqf t. l vti ub0yt bsqb! Ju jt! b! gwpsj u! i f sc! up! i f rql! sf rjf wf! Qsvsjt! Brrp! vtf e! jo!
t dbcjft! boe! Uj of bl qf ejt! Fyuf sobrn! j ubrrp! cf of gu! u! jt! dpoej ujpote! vtf! bt! b! x bt! i! psjjo! b! dsf bn /! Ju
sf kwf obuft! u f! dqn qrfhjpo! boe! t! jo! upof! n bz! cf! bqqrjfe! jo! ejt dprpsujpo! ps rptt! pg
qjhn f obujpo! Sppujt! brtp! vtf e! jo! pct usvdujpo! pg vsj obsz! qbt bnf! boe! bn n f opsi f b! Ju jt! esvol!
bgf slef rjwf sz! up! qspdvf! dpqjvpt! rpd! jbrtejt di bshf /! Ju jt! dbqbcrrf! opvhi! up! ejt t pwr! pybrjrd! upof t!
qsf tf ujo! j eof z! Vtf gvrjjo! t jhot! pg dpohf t u! ef! vuf svt! boe! qjjo-! qjogvrraf sjpet-! gyf e! qjjo-! drpu!
boe! bn n f opsi f b! f oepn f usjptjt! E f dpujpo! jt! vtf gvrjjo! sjd f u! -! ef rbfz e! cpof! dpot prjebujpo! boe!
dbrjvn! ef gcf odz! 49-!4: -!51! /!

Bzsvf ejd! bdjpot! 52! /!

Wf ebob! t u! bqbob.!! Vtf gvrjjo! n bobhf n f oupgbrtqbjogvrrafpoej ujpote!
Wbsozb. !Bti pl b!jn qspwf t! dqn qrfhjpo! pg u f! cpez/
Hsbi j. Bti pl b!jn qspwf t! ejhf t ujpote! boe! bt t jn jrbujpo/
Usjt i bobti obn .! Bti pl b! brfwjbuf t! f ydf t t jw! u! jst u!
Ebi b! ti bn bobn .! Bti pl b! brfwjbuf t! cvsojoh! t f ot bujpo!
Lsjn jhi ob. !Bti pl b! jmt! brtjogf dujvpt! bnf out!
Ti pu b! ju Bti pl b! jt! vtf gvrjjo! n bobhf n f oupgbrtfe n bupvt! dpoej ujpote!
Wyt i! btskju! Bti pl b! jt! vtf gvrjjo! upyjdjyf t! boe! brtcrppe! ejt f b f /!
Bqbd j! ju!! Ju vtf gvrjjo! n bobhf n f oupgjogtan n bujpo! pgrzn qi! lopef t!
Btsjhebs! obti bobn .! Ju! n bobhf n f oupgf ydf t t jw! crff ejoh! evsjoh! n f ot usvujpo!

I pn f! sf n fejft!

Jo! Qsbebs! Sphl! pg g n brft-! L ti f f sbqbl b! pg jut! 7! hn! cbs! qpx efs! ti pvra! cf! ubl fo! ju jt! t p!
f g f dujw! jo! brtuzqf t! pg bcopsn brtejt di bshf t! qf slwbhjob! L ti f f sbqbl b! jt! brtp! cf of g d j r t j o! v u f s j o f!
j of s j b-! v u f s j o f! q b j o-! v s j o b s z! d b r d v m t-! e z t v s f b! Jo! q b j o-! j u t! q b t u f! p g c b s! l t i p v r a! c f! b q q r j f e! p o! u b u
t j u f! /! U i f! x p n f o g r h! p g D i i b u j t h b s i! c p j r h u f! c b s! p g B t i p l b! j o! d p x (t! n j r h-! b e e! t v h b s! b o e!
d p o t v n f! j u p o d f! b! e b z! g p s! u s f f! e b z t! b o e! s f q b u u f! d p v s t f! b g f s l u s f f! n p o u t! u p! q s f w f o u
h z o f d p r p h j d b r t e j t p s e f s t! /! J o! J o e j b! n b s s j f e! l j o e v! x p n f o l f b u u f! g p x f s l c v e t! p g T b s d o b! b t p a b! p o!
u f! # B t i p l! T i b t u! j! e b z! #! u p! h v b e e! u f j s d i j r e s f o l b h j o t u h s j f g b o e! t p s s p x /! U i f! q f s t p o t! t v g f s j o h!
g s p n! n f o u b r t e j t p s e f s l b s f! b e w j t f e! u p! u b l f! c b u! v o e f s l u f! t i b e f! p g B t i p l! u s f f! /! G p s! n f o u b r t a j f d f-!
u f! o b u j w t! q s f q b s f! t q f d j b r h! f s c b r h N b r b! v t j o h! s p p u q j f d f t! p g T j u b! B t i p l! b o e! h j w f! j u u p! u f!
q b u j f o u t! /! U i f! q b u j f o u t! b s f! b e w j t f e! u p! q v u u f! q p x e f s f e l t f f e t! j o t j e f! u f! Q b o!) C f u r t w j o f *! b o e! f b u j u
f n q u z! t u p n b d i /! J u j t! h f o f s r t s f d p n n f o e b u j p o! c z! u f! l i f b r f s t! u p! c p j r h u f! c b s! ! x j u! d p x A! n j r h! b o e!
u b l f! u f! n j r h!) b g f s l s f n p v j o h! u f! c b s! *! /! G p s! u b t u f-! t v h b s! d b o! c f! b e e f e! /! U i f! i f b r f s t! t v h h f t u f w f s z!
g n b r h! o b u j w f! u p! u b l f! u j t! n j r h! p o d f! j o! b l e b z-! v q u! u s f f! e b z t-! j o! f w f s z! 4! n p o u t-! b t! q s f w f o u j w f! u p!
h z o f d p r p h j d b r t h s p v c r f t! /! J o! d b t f! p g n f o p s s i b h j b-! u f! i f b r f s t! c p j r h u f! c b s! ! j o! x b u s l b o e! q s f q b s f! b!
e f d p d u j p o! /! J o! u j t! e f d p d u j p o! n b o z! p u f s i f s c t! b s f! b e e f e! /! U i j t! e f d p d u j p o! j t! h j w f o l f w f s z! n p s o j o h!
) f n q u z! t u p n b d i *! u p! u f! q b u j f o u t! /! N b o z! i f b r f s t! c p j r h u f! c b s! ! j o! n j r h! b r t p! /! U i f! e f d p d u j p o! j t! b r t p!
v t f e l f y u f s o b r n z! g p s! x b t i j o h! /! J o! d b t f! p g T b g e! Q b o j!) M v d p s s i p f b *! u f! i f b r f s t! c p j r h u f! c b s! ! j o!

Q!Qsbei bolf ubrh !!!!KpvsobrtpgDi f n jdbrrtboe!Qi bsn bdf vjdbrrtSf tf bsd! -!311: -!2!)*;73.82!
.....

n jywsf! pg n jrhl! boe! x buf s! X i f o! x buf s! f wbpqsbu f t! -! u f! dpn cjobijpo! jt! hjwf o! up! u f! qbjf out!
\: -52-53^

Gpsn vrbujpo!boe!eptbhf!\54^

Bti pl bejti ub!!!!!!!!!!!!!!!!!!!!;!!!!!!!!!!!!26!.!41!n rtc/j/e!/0u/j/e!
Bti pl l x bu!!!!!!!!!!!!!!!!!!!! ;!!!!!!!!!!!!26!.!41!n rtc/j/e!
Tff elqpx ef s!!!! ;! 2!.!4!hn !c/j/e!
Gpx f slqpx ef s ;! 2!.!4!hn !c/j/e!
Bti pl hi sjub!!!! ;! 6!!!!!!!!hn !c/j/e'

Dpodnrtjpo!!

Tbsbdb!bt pdb!jt!i jhi n!sf hbsef e!bt!bo!vojwf st brtqbobdf bl!jo!u f!bzvswf ejd!n f ejdjof!/j!jt!pof!pg
u f!vojwf st brtqbouli bwjoh!n f ejdjobrtdijwujf t!/Ui jt!wf st bujrh!qrboujt!!u f!tpvsdf!pgwbsj pvt!uzqf t!
pgdqn qpvoet!/Jo!u f!qsf tf out df obsjp!n boz!qrboubsf !vtf elup!sf buln boz!ejtf btft!/CvdBti pl bljt!
bodf oulboe!sf rjbrctrl!tpvsdf!pg n f ejdjof !tp!Bti pl bljt!!vtf e!jo!!n boz!qi bsn bdrphj dbrtdijwujf t!
rjt f!!boj!dbodf s!-!boj!n f opssi bhjd!-!boj!pyzupj d!-!boj!Nn j dspcjbrtdijwuz!boeli bwf lf yu oel vtf t!
jo!bzvswf eb!-!voboj! boe! i pn f pqbz! Jj i bwf! n boz! vtf t! rjt f! up! sf bul t! jo! jog dypot!-! DOT!
grodjpo!-!hf o!ups vsj obsz!grodjpot! /bt! u f! hrcbrtt df obsjp!jt! opx! di bohjoh! upx bset! u f! vtf! pg
opopyj d! qrbou! qspvdu i bwjoh! usbejypobrhn f ejdjof! vtf!-! ef wf rpnq f ou! pg n pef so! esvh! gpn!
Tbsbdb!bt pdb!t! pvrle!cf lf n qi bt j{f elgps!u f!dpousrtpg wbsj pvt!ejtf btft! /

Sf gf sf odft!

- 2/ i uq;0x x x /eb. bcbef n z/psh0ebhbsef ot` tbsbdb2/i un rh
- 3/ i uq;0x x x /tbsbdb.joejdb/dpn (Bzvswf ejd! Q bsn bdrp qf j! pg Jbejb! 3112! Wpr! Jt Qbsu J!
28.29!!
- 4/ i uq;0d pn n pot/x jl jn f ejb/psh0x jl j0buf hpsz;Tbsbdb` joejdb!
- 5/ UL !Cjtx bt <QL !Ef cobu !/Jbe!Kl jt uTdj- 2: 83-18)3*-! : .225/!!!!!!!!!!!!
- 6/ CM Ti bsn b! E sbwzbhvob! l bt u bn brbl b! 2^f ejjpo! Qvcrjdbujpo! t di f n f! Kjqvs! 2: 68<
531/!!!!!!!!!!!!
- 7/ i uq;x x x /oboebocjpn busjy/dpn 0bf x trhu f s/i un !
- 8/ QL ! X bssj f s! WQL ! Obn cij f s! QN ! Hboqbz! z! Tpn f! jn qpsubou n f ejdjobrtrbout! pg u f!
x f t u f so!hi bu!-!Jbejb!;!B!Qspjrf!/Jof sobujpobrE f wf rpnq f ou!Sf tf bsd! !Df ouf -!Of x !Ef rnj!
3111<454.471!
- 9/ i uq;0x x x /di bl sbqbojzbzvswf eb/dpn 0bt i pl b/i un m
:/ !N !B rj!Q bsn bdrphopt z-IDCT!Qvcrjt i f s! !Ejt usjcvpst -!Of x !Ef rnj!/3119<779.77: /!
21/ WE!Sbt uphj!/Q bsn bdrphopt z! !Q zupdi f n jt usz!-!Dbsf s! Qvcrjdbujpo!-!Obt i jl -!3114<37: .
381!
- 11. TL !Kjo!/N f ejdjobrtrbout!/ObujpobrCppl !Usv t u!Of x !Ef rnj!-2: 79<235!
- 23/ !TL !Tbei v<B!L i buvo<Q Q bubobx bt jo<U!Pi u vl j<N!Jt i jcbt i j!/K!Obu!N f e!-!3118!-72-!
591.593!
- 24/ CO!Ei bx bo<HL !Quboj! <SQ Sbt uphj<L L !Tjohi <KT!Uboepo!/Jbejb!K!Fyq!Cpjr! 2: 88-!
26!319.32: /!!!!!!!!!!!!
- 25/ !TD!Qbr!BQN bj u<CQDi buf sf f <B!Oboez!/Jbe!K!N f e!Sf d/- 2: 96!93)3*-!299.29: /!!!

- 26/ ITS!Kjo<TO!Ti bsn b!Qrbob!Nf e/- 2: 78-!26)5*-!54: .553/!!!!!!!!!!!!!!
- 27/ B!Tjohi <T!Tjohi <CL!Tbsn b<VQ!Tjohi <S!Tsjwbt ubw<L Q!Tjohi !/Juf sof uK!Brf sobjwf ! Nf e/-!311: -!7)!3*-!2.31/!!!!!!!!!!!!!!
- 28/ S!Ebcvs<B!Hvqub<UL!N boebr<EE!Tjohi <W!Cbkqj<BN!Hvsbw<HT!Mbwf l bs!Bgs!K! Usbe!Dbn /-!3118-!5)4*-!424.429/!
- 29/ T!Sbkbo<K!Kpi otpo<K!Tf mjdi sjt uz!K!Tdj!Usbot!Fowjspo/- 3119-!2)4*-!25: .262/!
- 2: / !K!B oobqv sob<V!U!Ci brf sbp<E!T!Jz of hbs!G!Jupuf sbqjb/- 2: : -!81-!91.93/!!!!!!!!!!!!!!
- 31/ O!Tf f u bsn <l !Tvk f u <H!Kzpu jti x bsbo<B!Cbsbe<H!Ti bsbobcbt bqjb<Q!Ti bcbob!Jbe! K!Q!Tdj!/-!3114-!76)7*-!769.76: !/
- 32/ IO!N bu f x <N H!Boju b<UTM!Cbrb<TN!Tjwbl vn bs<S!Obsn bei b<N !L brbzbot voebbn !/ Qbsbdj uprtSf t/- 311: -!215-!2128.2136/!!!!!!
- 33/ DE!Wbshi f tf <D!Ojbs<!L S!Qboj l bs<Tbjti !/Bn brb!Dbof sl Sf tf bsd! /- 2: : 3-!65)2*-!48.51/!
- 34/ KE!L bvs<L!N jt sb!K!Jbejbo!Di f n !Tpd/- 2: 91-!68)23*-!2354/!!!!!!!!!!!!!!
- 35/ UC!N jeef rhppq<SQ!Mbcbejf !/Jub!K!Dsvf !E svh!Sf d/-!2: 97-!35)2*-!52.55/!!!!!!
- 36/ N!K!Ci boebz<L S!Di boest f l i bs<L N L !bwf sjbqjb!K!F u opqi bsn bdpm2: : 6-!58)4*-!25: .269/!!!!!!!!!!!!!!
- 37/ Z!L vn bs<L !! bsjebt bo<SS!Sbp!Cvmt!Cpu!TvsW!Jbej b/- 2: 91-!33!u !-!272.276/!!!!!!!!!!!!!!
- 38/ UC!N jeef rhppq<SQ!Mbcbejf !/! !Obvsqpsd !Tf s/- 2: 96-!51)7*-!966.968/!!!!!!!!!!!!!!
- 39/ !UC!N jeef rhppq<SQ!Mbcbejf !/! !Obvsqpsd !Tf sl d!51!/-!2: 96-!829-!634.637/!!!!!!!!!!!!!!
- 3: / HW!Tbzwbwj <E O!Qbt be<T!Q!Tf o<QL !Tf o!Jbe!KN f e!Sf t/-!2: 81-!69-!58/!!!!!!!!!!!!!!
- 41/ K!D!Tbi b<FD!Tbwjoj <T!L bt jobu bo!Jbe!KN f e!Sf t/- 2: 72-!5: -!241.262/!!!!!!!!!!!!!!
- 42/ DS!L bsojd !/Bdub!Qi zupu f s/- 2: 81-!28-!292/!!!!!!!!!!!!!!
- 43/ N B!L i bo<U!L i bo<[!Bi n be!G!Jupuf sbqjb- 2: : 5-!76)6*-!555.557/!!!!!!!!!!
- 44/ E!Kpi o!Jub!K!Dsvf !E svh!Sf t/- 2: 95-!33)2*-!28.4: /!!!!!!!!!!
- 45/ TQ!Tpo!Dvss!Tdj/- 2: 74-!43-!613.614/!!!!!!!!!!!!!!
- 46/ TL!Hvqub!Jbe!Nf e!Sf t/- 2: 4: -!6: -!223/!!!!!!!!!!
- 47/ TO!B st ddrf sbwof <B!Hvobyrbl b<SH!Qboopl f !/K!F u opqi bsn bdpm2: 96-!24)4*-!434.446/!!!!!!!!!!!!!!
- 48/ Q!Ti bsn b!E sbwzbhvob!W!hzbo!Di bvl i bn ci b!Ci bsj!Bdbef n z-!Wbsobtj-!911/!!!!!!!!!!!!!!
- 49/ L N!Obabl bsoj!Ui f !Jbejbo!N bnf sb!N f ejdb!4!f ejjpo-!Qpqvrb!Cppl !E f qpu!Cpn cbz-! 2: 68-!2186/!!!!!!!!!!
- 4: / li uq;Ox x x /rb.n f ejddb/dpn Qspevdt .tjohrfni f scdbqt vrft .n boljt u b/i un rh
- 51/ li uq;Ox x x /bzvswf ejdejf utpmujpot/dpn Bti pl b/qi q!!!!!!!!!!!!!!
- 52/ i uq;Ox x x /i f scbrdvsf joejb/dpn O f sctOtp l b/i un !!!!!!!!!!!
- 53/ i uq;Ozvswf eb.gpszpv/dpn Qzvswf eb` i f scOtp l /i un m